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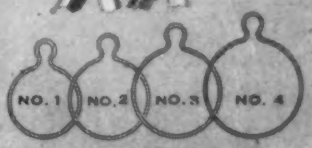

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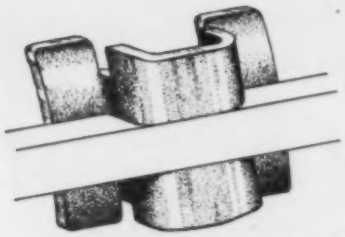

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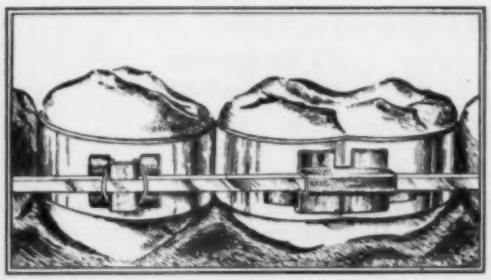

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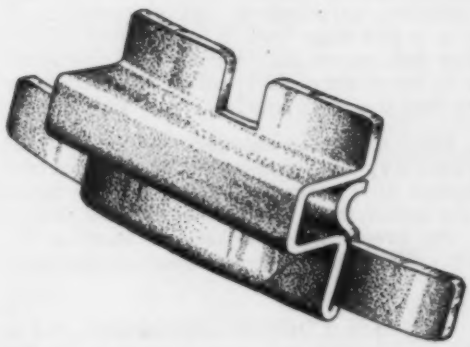

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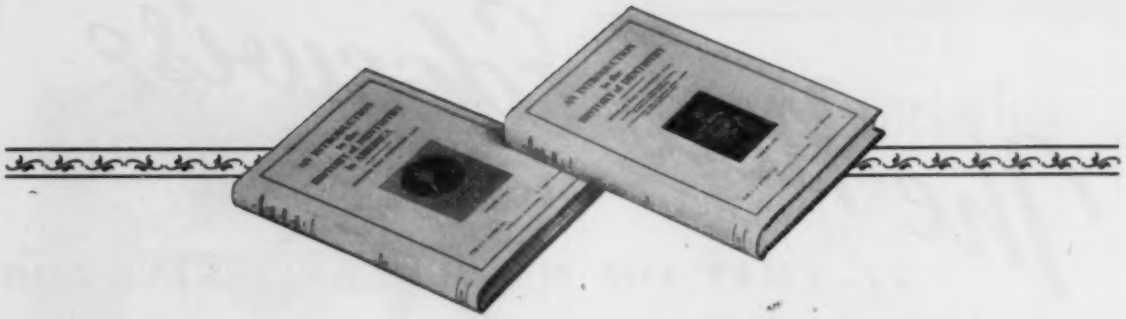

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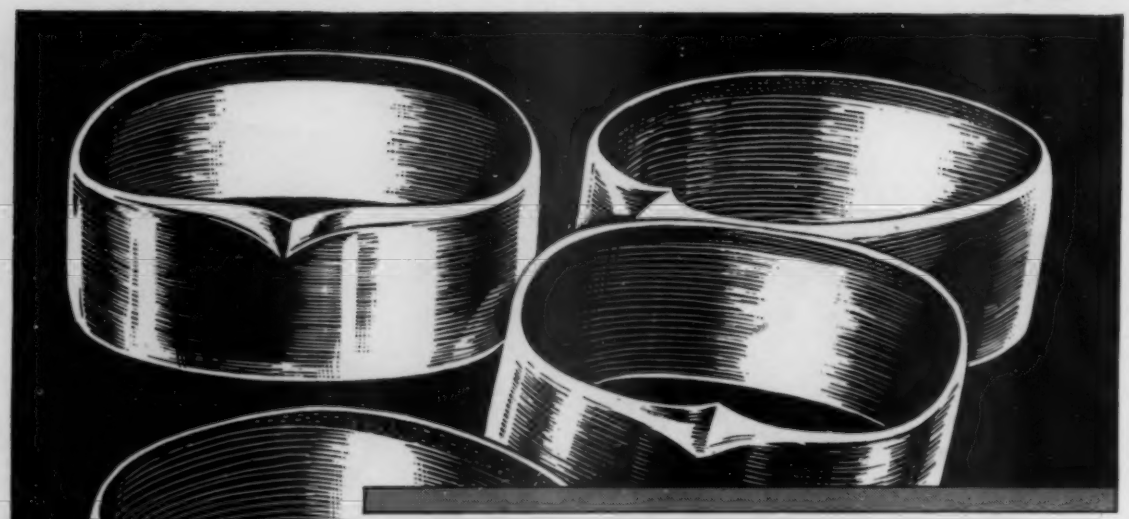

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VOL. 34 DECEMBER, 1948 NO. 12

Original Articles

SERIAL STUDY OF OCCLUSION (BIRTH TO TEN YEARS OF AGE)

J. H. SILLMAN, M.A., D.D.S.* NEW YORK, N. Y.

THE purpose of this paper is to present a serial study of occlusion and some suggestions on preventive orthodontics. The material is drawn from serial casts of over fifty children whose occlusion I have recorded continuously from birth; some of them are now in their eleventh year. This is the first time that such a serial presentation has been made.

In order to have a better understanding of occlusion, which is basic for dentistry, it is necessary to make records of the occlusion in all phases of dental development. This ontogenetic development should include the predental phase, changes of dental arch relationship, changes of anatomy, changes of morphology, and changes of occlusion. Some of these phases will be discussed here. This dynamic process of growing up should be a part of dental education, so that a more mature concept of prevention may find its way into dental practice.

Occlusion cannot be taken for granted, for if we observe more carefully we will find many occlusal defects even in supposedly "good" occlusion. Some of these defects may mean little in the life cycle of occlusion, while others may affect the occlusion so as to require treatment. Much could be done in preventive orthodontics if we were trained to recognize the onset of the subtle departures from a "good" occlusion, and applied simple measures to prevent their disturbing influence during the developmental stages.

Before presenting the serial records from birth of children who have received no appliance therapy, I would like to describe a few reference points of the gum pads at birth which can be traced to maturity. The anatomic landmarks of the maxillary and mandibular gum pads at birth are shown in Fig. 1. The gum pads are clearly segmented, and the segments correspond in number to the underlying deciduous tooth sacs. The sulci between them, with the exception of the posterolateral sulci, mark the position of the interdental papillae.

*Associate Visiting Dentist, Bellevue Hospital.

The posterolateral sulci are the dividing lines between the true and false gum pads. All teeth (decidous and permanent) usually erupt anterior to this line. The lateral sulci, which become the posterior dental papillae of the canines (deciduous and permanent) can be traced from birth to maturity, and therefore serve as anatomic landmarks for evaluating the anteroposterior relationship of the dental arches.

I will now present five children in order to illustrate general principles. Roger and Carol have received adequate dental care, while Ann, Marie, and Patrick have not.

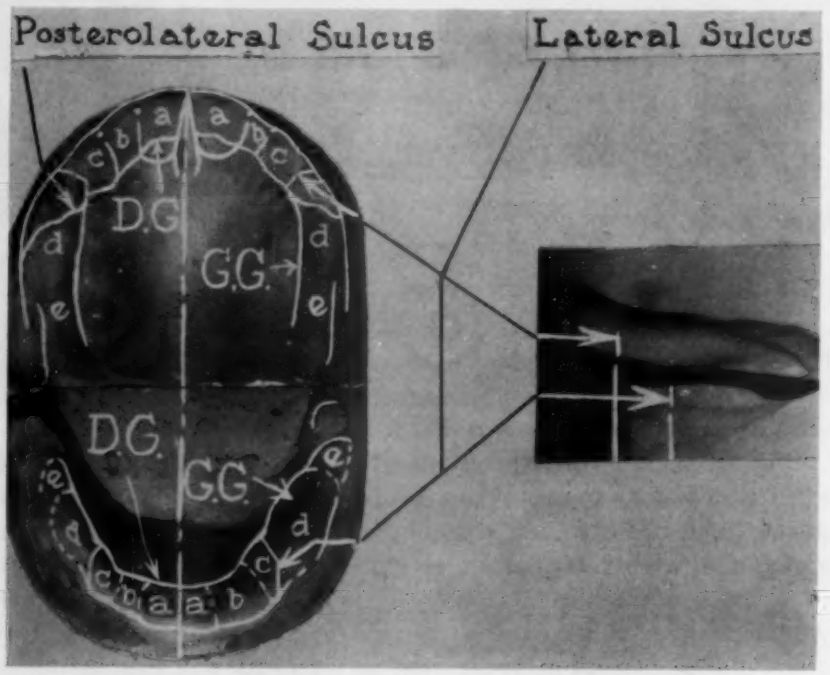


Fig. 1.—Casts at birth; occlusal and side view. Letters *a*, *b*, *c*, *d*, and *e* designate the location of the deciduous tooth sacs; *D.G.*, dental grooves; *G.G.*, gingival grooves. Lateral sulci serve as landmarks for evaluating the anteroposterior relationship of the dental arches. Posterolateral sulci are the dividing lines between the true and false gum pads.

Roger presents a "good" development throughout his series. Although his occlusion is one of the best of the children who are being studied, yet certain subtle defects appear which might pass unnoticed. Here is Roger's occlusal history. At 3 days (Fig. 2) there is no occlusion between the gum pads, and the mandibular gum pads are posterior, as evaluated by the lateral sulci (white lines). At 4 months, the lower first incisors have erupted. Note the change in the anteroposterior relationship.

Prior to and during the eruption of the incisors, the child can make occlusal contact between the anterior gum pads by bringing the mandible into a protrusive position. This is the first time occlusion occurs. However, in order to bring sufficient pressure on the tissue overlying the erupting tooth, he must

interpose his fingers or objects because of insufficient vertical alveolar growth at this time. A child may ofttimes be seen with his finger in his mouth, and drooling profusely. This must not be confused with finger-sucking. At this stage, an intelligent parent should provide an appropriate rubber object as a substitute for the finger before the teeth erupt. This may prevent a potential sucking habit from starting.

At 13 months all incisors have erupted, and the mandibular gum pads have progressed to a more anterior position. There still exists a marked horizontal and vertical overbite which is normal for this phase of development. Prior to 1 year, 6 months, when the first molars are preparing to erupt, the child may be seen exercising the lateral movements of the mandible and bringing the posterior gum pads into contact. The child once more has the urge to bite, and drools profusely. Again a rubber object to gnaw on is very useful.

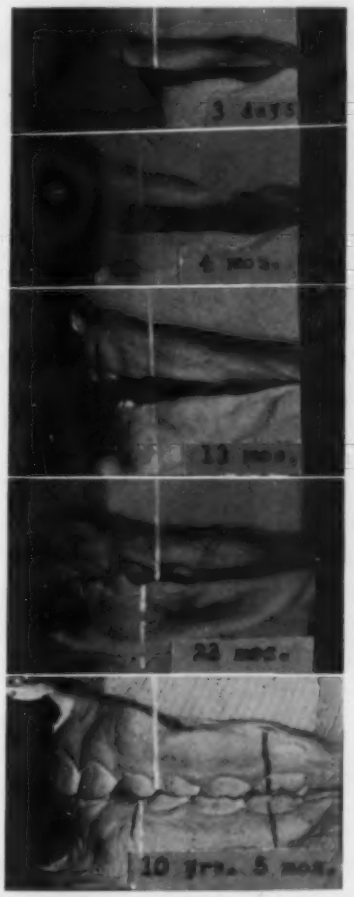


Fig. 2.—Roger's casts; left side view, illustrating the progressive changes in the anteroposterior relationship of the dental arches. White solid lines designate the maxillary lateral sulci; dotted lines designate the mandibular lateral sulci.

Now I shall add a few additional remarks regarding the problem of teething. If growth and development are appropriately synchronized and harmonious, all teeth will erupt anterior to the posterolateral sulci, and the child

will experience little difficulty in teething because of the loose connective tissue in this region. However, teething difficulties will be experienced when a tooth erupts posterior to the posterolateral sulci, because of the dense connective tissue present.

With the eruption of the first deciduous molars, the relative anteroposterior relationship is definitely established, and the dental arches assume a relatively adult position. The horizontal overbite is reduced, while the vertical overbite is still pronounced. By the continuing eruption of the molars, plus the increased posterior alveolar growth, the vertical overbite also is reduced. From 3 years, 6 months to 7 years, there is relatively little change in the occlusion. At 7 years, 9 months, there is a slight buccal displacement of the maxillary left permanent molar, which may have a disturbing influence on the occlusion. At 8 years, 9 months, the first incisor is slightly rotated, while the molar is still displaced buccally. At 9 years, 6 months, the condition is unchanged. By testing the occlusion in all movements of the mandible, the displacing forces can be recognized and removed by grinding. At 10 years, 5 months, the occlusion is maintained without further disturbance. The question now arises as to whether the variation of the maxillary first molar is transitory, or whether it will remain a permanent defect. In any event, the occlusal disturbance present was corrected, and I believe this is preventive orthodontics.

Carol is another example of an occlusal defect that might pass unnoticed. Although it may appear to be minor, nevertheless it has the potentiality of altering a "good" occlusion into a Class II (Angle). This is her occlusal history. At 6 days (Fig. 3) Carol has the usual space between her gum pads, and a posterior relationship of 4 mm. as measured by the horizontal distance between the lateral sulci in the maxilla and the mandible. This is a normal relationship at birth. At 10 months, the anteroposterior relationship has changed so that the lateral sulci of both jaws are now in the same vertical plane. In other words, there has been a 4 mm. greater translation in the mandibular arch. At 1 year, 2 months, the deciduous first molars have erupted, and have assumed an edge-to-edge relationship. Because the maternal family history presents a Class II tendency in many of its members, this condition must be considered as a possible defect that may persist. At 2 years, 8 months, the slight posterior tendency is still present and the vertical overbite is slightly exaggerated. At 6 years, 11 months, the permanent first molars have erupted, and the posterior occlusion maintained. At 8 years there is again a definite edge-to-edge relationship which has been clinically present since she was 10 months old. This was corrected by spot grinding the buccal cusps of the maxillary teeth and the lingual cusps of the mandibular teeth, permitting the mandible to assume a more anterior position. Carol's casts at 11 years show an improved occlusion, and it is hoped that this new bite of convenience will proved to be permanent. I believe a good service was rendered to the patient in preventive orthodontics.

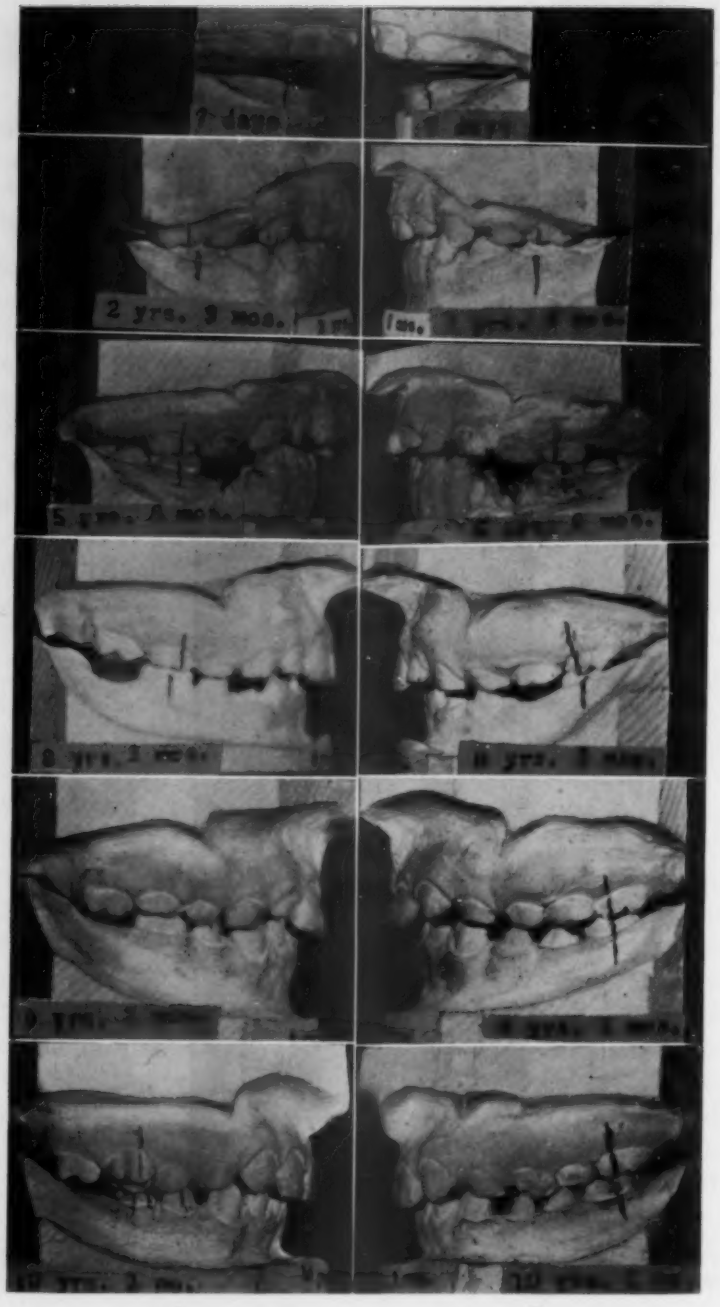
Roger and Carol have received adequate dental care; the next three children have not.

Ann (Fig. 4, *A* and *B*) comes from a family in which the parents and six siblings all have potentialities for the development of "good" occlusion. At

7 days, Ann presents a posterior relationship of the mandibular gum pads. At 1 year, 10 months, the deciduous dentition is completed with excellent occlusion, which is maintained until 4 years, and 5 months. At 5 years, 8 months, both mandibular "d's" (small letter designating the deciduous teeth) are carious to

Fig. 3.—Carol's casts; left side view. Note the posterior tendency at 1 year, and 2 months, and at 8 years. Spot grinding was done, and the improved occlusion is shown by casts at 11 years.

the gum line. At 6 years, 2 months, both these teeth are lost with no appreciable change in the excellent occlusion. At 8 years, 2 months, the first premolars have erupted prematurely and are in a rotated position. These rotations have taken place in many of my series under similar conditions. I do not



A. *B.*

Fig. 4.—*A* and *B*, right and left side of casts of Ann. Although the occlusion is impaired due to dental neglect, there is relatively no clinical change in the anteroposterior relationship of the dental arches.

mean to generalize that all teeth that are rotated are due to premature loss of deciduous teeth. However, several of my series seem to indicate that when a deciduous tooth is prematurely lost (Fig. 5, *A*, *B*, and *C*) and the space thereby created has not closed up to the width of the successor, rotation occurs. At 9 years, 2 months, the mandibular second premolar, which erupted prematurely, is rotated. The maxillary right permanent molar has dropped below its occlusal plane and has changed its axial position because of the loss of the mandibular antagonist. At 10 years, 1 month, all mandibular premolars have erupted, and their rotations maintained. Because of the rotations, and also the congenital absence of the maxillary lateral incisors, many occlusal defects are present. However, what is most important is that no clinical change is noted (Fig. 4, *A* and *B*) in the anteroposterior relationship of the dental arches.

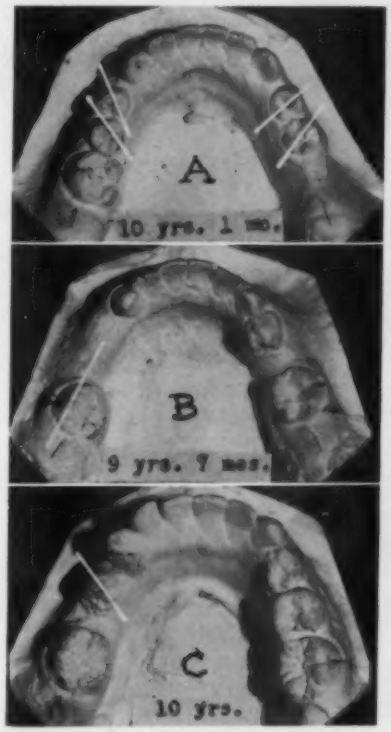
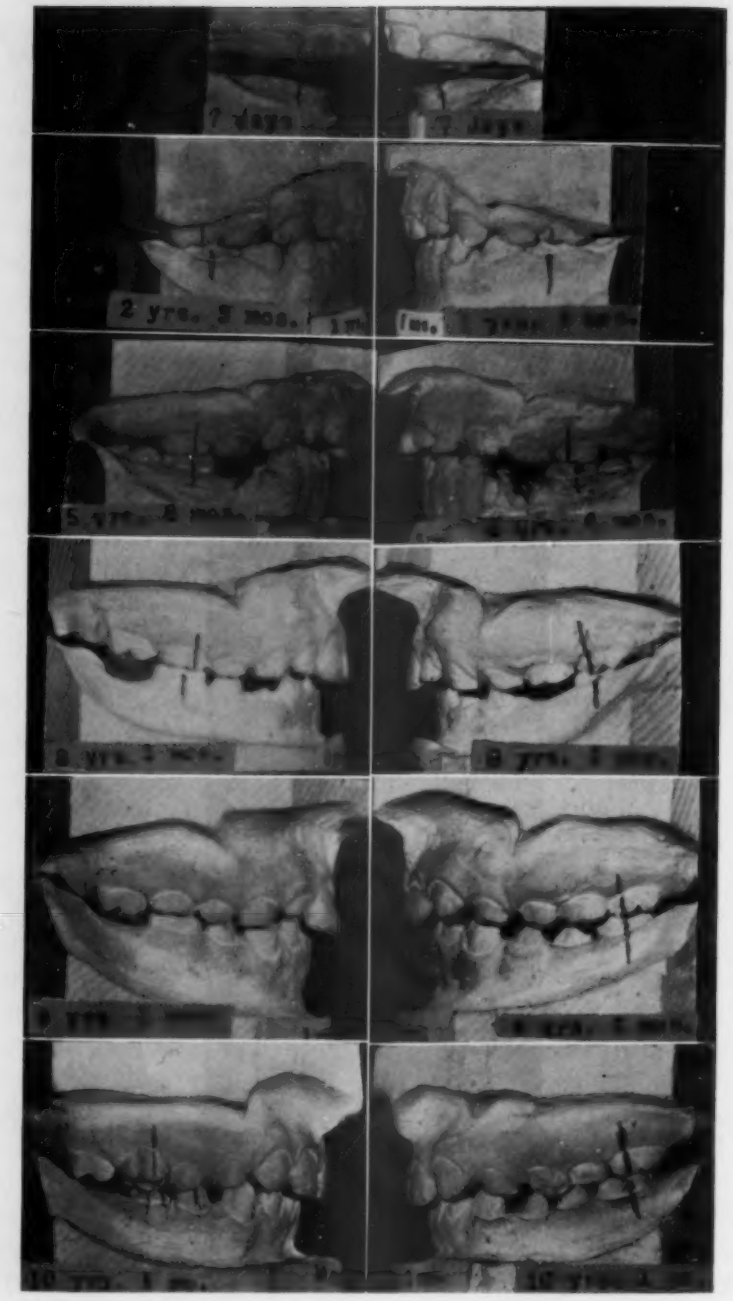


Fig. 5.—Occlusal view of casts. *A*, Ann; *B*, Marie; *C*, Patrick. Note the rotations of permanent teeth following premature loss of deciduous teeth. When the spaces thereby created have not closed up to the widths of their permanent successors, rotations occur.

Marie is another child (Fig. 6, *A* and *B*) of great interest. At 3 days she has a posterior relationship of the mandibular gum pads of 5 mm. There is a conical tubercle below the maxillary incisal frenum. At 1 year all maxillary incisors have erupted, with a marked space and a cleft between the first incisors. The horizontal overbite, although pronounced, is normal for this stage of development. At 1 year, 8 months, all first molars are present, and the anteroposterior relationship has developed to its relatively adult position. However, there is a marked horizontal overbite, which is considerably reduced 4



A. *B.*

Fig. 4.—*A* and *B*, right and left side of casts of Ann. Although the occlusion is impaired due to dental neglect, there is relatively no clinical change in the anteroposterior relationship of the dental arches.

mean to generalize that all teeth that are rotated are due to premature loss of deciduous teeth. However, several of my series seem to indicate that when a deciduous tooth is prematurely lost (Fig. 5, *A*, *B*, and *C*) and the space thereby created has not closed up to the width of the successor, rotation occurs. At 9 years, 2 months, the mandibular second premolar, which erupted prematurely, is rotated. The maxillary right permanent molar has dropped below its occlusal plane and has changed its axial position because of the loss of the mandibular antagonist. At 10 years, 1 month, all mandibular premolars have erupted, and their rotations maintained. Because of the rotations, and also the congenital absence of the maxillary lateral incisors, many occlusal defects are present. However, what is most important is that no clinical change is noted (Fig. 4, *A* and *B*) in the anteroposterior relationship of the dental arches.

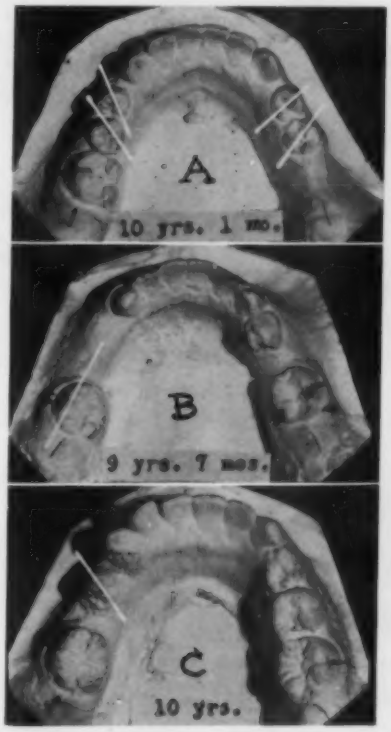


Fig. 5.—Occlusal view of casts. *A*, Ann; *B*, Marie; *C*, Patrick. Note the rotations of permanent teeth following premature loss of deciduous teeth. When the spaces thereby created have not closed up to the widths of their permanent successors, rotations occur.

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A. *B.*

Fig. 6.—*A*, Marie's casts, right side view. Note the decrease in horizontal overbite between 1 year, 8 months, and 2 years. Note closure of space, particularly the mandibular "e."

B, Marie's casts, front view. Note conical tubercle at 3 days. Also note the cleft and space between the deciduous incisors, and its absence with the change of dentition.

months later. At 3 years, 8 months, the occlusion and the bite are excellent. The diasthema and the cleft between the first incisors are still present. At 5 years, and 3 months, relatively little change in the occlusion is noted.

At 6 years, 7 months, dental decay has caused the destruction of five teeth. The mandibular right "e" has been lost, while the mandibular left "d" and "e" and the maxillary right "d" and "e" are badly carious. The whole occlusion has been impaired, so that the child now has a dual bite. The result of this dental neglect is evident, but the question is, "Will it be permanent?" At 7 years, 8 months, the mandibular left "d" and "e" and the maxillary right "d" have been lost. Both lower permanent molars, particularly the right, have tilted forward and are slightly rotated. The cleft between the maxillary first incisor is still present, and the diasthema has increased in size to the extent of 6 mm. The mandibular permanent molars seem to have drifted farther forward and rotated (Fig. 5, *B*), particularly on the right side. The space occupied by the "e" which had a mesial distal diameter of 9.5 mm. has now been reduced to 3.5 mm. With the eruption of the permanent incisors, the diasthema and cleft, which were present in deciduous dentition, are eliminated. The casts at 9 years, 11 months show occlusion still impaired.

Finally, I will present Patrick, who comes from a family in which the father and mother have poor occlusion, and five siblings whom I have followed from birth also exhibit a similar tendency. Patrick at 9 days (Fig. 7, *A* and *B*) has a posterior relationship of the mandibular gum pads of 5 mm. At 1 year, 2 months the lateral sulci of both jaws are in the same plane. All maxillary incisors have erupted, with the "b's" in lingual alignment. At 1 year, 6 months, the right "b" is in lingual occlusion. At 2 years, 1 month, the child seems to prefer to bite labially to the right "b," which causes a posterior relationship on the left side. At 2 years, 6 months, the maxillary right "b" is definitely in lingual version, and likewise the maxillary right "d." At 3 years, 2 months, the occlusion remains relatively unchanged. There is ample room in the arch for the incisor, which is in the lingual version, and, if given a chance, it will assume its proper position. It must be remembered at this time that there is a relatively greater increase in the vertical dimension of the molar than there is in that of the incisor. The incisal edges were ground so as to free the locked incisor. At 5 years, 3 months, there is a spontaneous correction of this tooth, as well as of the maxillary right first deciduous molar.

At 6 years, 2 months, dental caries has caused the breaking down of the maxillary left "d," and the mesial marginal ridge of the maxillary right "e." At 7 years, 6 months, this maxillary right "e" is completely broken down to the gum line, and the first molar tilts forward. At 8 years, 2 months, the maxillary right first molar has encroached farther on the space previously occupied by "e." This change of molar relationship impairs the entire occlusion. At 10 years, the maxillary right "d" and "e" have been lost, the first premolar is shown rotated and has drifted posteriorly. Will the occlusion be permanently impaired? It is my belief that the occlusal history answers this question.

It is hoped that this paper will serve the purpose of giving a better understanding of the development of occlusion, and the importance of dental care for

A. *B.*

Fig. 7.—*A*, Patrick's casts, right side view. Note the spontaneous correction of the deciduous second incisor, and the changed relationship of the permanent teeth.

B, Patrick's casts, front view. Note the changes in the occlusion, and the spontaneous correction of the deciduous second incisor.

all teeth (deciduous and permanent) so as to maintain arch continuity. Occlusion and all the anatomic landmarks of the dental arches are constantly changing, and periodic observation is necessary in order to understand the individual variations of development. Furthermore, observation is important, for it teaches one what to do, and also what not to do, in rendering a service in preventive orthodontics.

SUMMARY

1. Material is drawn from casts of over fifty children, followed continuously from birth to 11 years.

2. The study of occlusion should include the predental phase, changes of dental arch relationship, changes of anatomy, changes of morphology, and changes of occlusion.

3. The first time occlusion is noted is prior to the eruption of the incisor teeth.

4. Prior to and during eruption of teeth, particularly the first molars, the child may be seen with his fingers in his mouth. This should not be confused with finger-sucking.

5. Teething difficulties are experienced when the teeth erupt in the false gum pad region instead of the true gum pad region.

6. At birth the mandibular gum pads are posterior, and progressively move forward until the first deciduous molars erupt. At this time the relative anteroposterior relationship of the dental arches is established.

7. Spot grinding can be used as an aid in eliminating some occlusal defects.

8. In cases where the child has the potentiality of developing "good" occlusion, little change is noted in the anteroposterior relationship of the dental arches due to premature loss of deciduous teeth. However, in cases with "poor" occlusion potentialities, changes are noted.

9. Dental care of all teeth is important so as to maintain arch continuity.

Part of data was obtained from the Department of Dentistry, Bellevue Hospital, and the Department of Obstetrics and Gynecology and of Pediatrics of New York University College of Medicine.

The author wishes to thank Dr. W. Rosenbaum, Dr. L. E. Holt, and Dr. W. E. Studdiford in whose departments at Bellevue Hospital part of this study was made, Dr. Harry Bakwin for his counsel, and finally the families who cooperated in this study.

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A NEW AND EASY WAY OF TAKING PROFILE PHOTOGRAPHS

CLIFFORD L. WHITMAN, D.D.S.,* HACKENSACK, N. J.

PHOTOGRAPHY as a recording and diagnostic aid can be of inestimable value as an adjunct in any orthodontic practice, if it is properly done. In many practices, photography is either poorly done or not done at all. It is usually neglected because it is too much work. The consistently poor results which I obtained and the time it took to obtain them inspired me to investigate ways and means of producing clinical photographs with consistently good results. So many of my photographs appeared flat due to improper lighting, and many of them were fuzzy due to improper allowance for the depth of field of the lens being used. Also, in spite of much care, many of the attempts at profile photography resulted in pictures that were improperly aligned. The poor photographic registration of good orthodontic results was, to say the least, very disheartening. It is my purpose in writing this paper to present a technique which will eliminate many of the time-consuming problems which were previously associated with orthodontic photography. There are several advantages to this method, and some of them follow.

First, it requires a minimum of space, as the subject is aligned by using a beam of light rather than a cumbersome piece of mechanism. Second, it is quick and efficient, and, third, the results may be reproduced with a very high degree of accuracy time after time.

A profile for orthodontic purposes may be defined as a picture taken from such a point that the central axis of the lens passes through both orbital points of the subject. If it were not for the subject's nose, this would be a fairly simple thing to do, but, obviously, it is impossible to see both of the orbital points at one time when viewing the subject from a lateral aspect. To overcome this difficulty, we have devised an instrument called a profile relator, or, as we in our office call it, a "profilator" for short. This "profilator" (Fig. 1) consists of a one-eighth-inch horizontal piece of plastic about seven inches long and about two and one-half inches wide. One side of this "profilator" is termed the orbital line and is nothing more than a straight edge which rests on both orbital points with a piece cut out of the center for the nose. The piece that is cut out is about two and one-quarter inches wide and one and one-half inches deep. On either end of the horizontal piece, at right angles to the orbital line and at right angles to the orbital plane is cemented a piece of plastic three-quarters of an inch wide and eleven inches long. They are cemented with the three-quarter inch dimension in a vertical position at right angles to the horizontal piece. These lateral pieces are placed three and one-sixteenth of an inch

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from the center of the horizontal piece, two and one-half inches anterior to the orbital line. A hole one-quarter inch in diameter is drilled in each lateral piece. The lateral pieces are painted with an opaque paint so that no light can be transmitted through either piece. A one-sixteenth-inch sheet of brass one inch long and three-quarters of an inch wide is cut. A hole three-sixteenths inch in diameter is drilled in its center. This is later to be placed over the hole nearest the camera in a position which we will describe later in this paper. Four inches back of the orbital plane on either lateral piece, a small pair of holes are drilled through which an adjustable ribbon is passed. This is to support the "profilator" when it is in position on the subject's head.

Fig. 1.

In order to use this "profilator" we must first describe the principle upon which it works. For example, if a line were drawn through the central axis of the lens and continued on so that it passed through two orbital points on the subject, any other axis of the lens would then progress at a fixed angle through any two points upon this second axis and would bear a fixed relationship to the central axis. If the orbital line of the "profilator" were adjusted to the central axis of the lens, a beam of light would pass through the two holes in front of the orbital plane, if these two holes were in alignment on another divergent axis of the lens (Fig. 2). To reverse this process, if a beam of light were passed through these two holes so that they could be seen in the ground glass of the camera, then the orbital plane would fall upon an axis of the lens which would always be at right angles to the film and the subject's profile, thus assuring a true profile.

The following technique is used for adjusting the "profilator" before it can be used. The "profilator" is placed upon a table and clamped into position.

The camera is then placed at a predetermined distance from the "profilator" from which all future profile pictures will be taken. The camera is then focused and adjusted so that the central axis of the lens lies upon the orbital plane of the "profilator." The metal piece which we previously described is placed over the hole nearest the camera, and the wall behind the "profilator" is then illuminated. The metal piece is then adjusted so that light may be seen through the hole when focusing on the ground glass. When light is seen through the holes, the metal piece is then cemented into position.

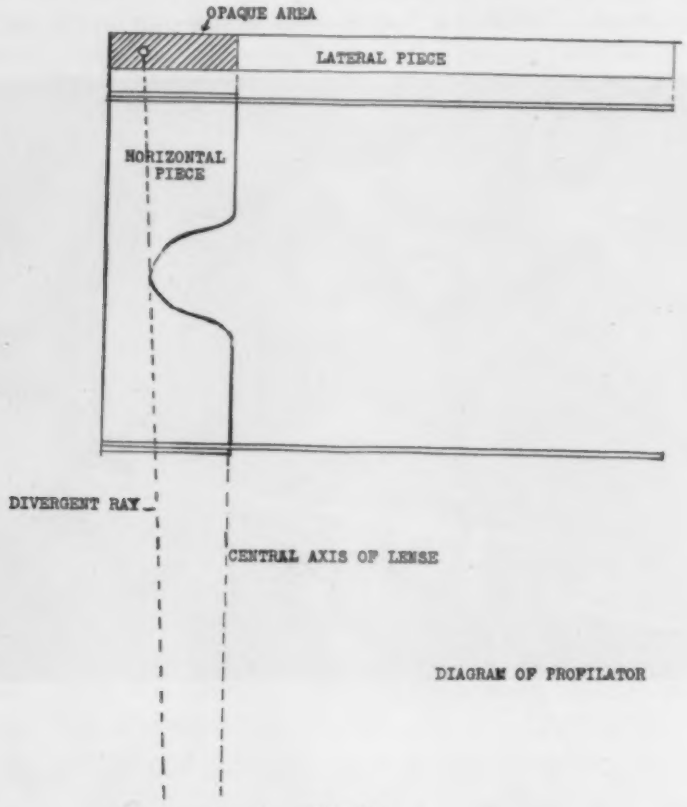

Fig. 2.

It is necessary to digress at this point to discuss the type of lens to be used for this type of photography. In order to obtain the best possible perspective of an object, a lens of a long focal length should be used regardless of the size of the film used. By a long focal length we mean a lens whose length is at least two to three times the length of the diagonal of the film. This is necessary in order to get a large image and the best possible perspective without getting too close to the subject. If the room space permits, a lens of even greater focal length is desirable. It also follows that a slow-speed, sharp-cutting lens is better for our purpose than a fast lens because it is necessary to stop the lens down anyway in order to obtain a greater depth of field.

In taking a profile picture, the subject is seated in a chair which has an adjustable headrest. The "profilator" is placed upon the subject's head so

that the orbital line of the "profilator" rests upon the orbital line of the patient and the lower border of the lateral arms of the "profilator" pass along the superior border of the auditory meatus. The wall behind the patient is illuminated. The camera is placed at the same distance at which the "profilator" is originally adjusted, and the image is then viewed through the ground glass or view finder. The head of the subject is moved very slowly until light may be viewed upon the ground glass as it passes through both holes of the "profilator." When light is visible through these holes, the subject is instructed to remain in that position and the "profilator" is removed. The subject is illuminated and the picture taken. By adjusting the holes of the "profilator" to coincide with a view finder rather than a ground glass focusing back, this same setup may be used.

Pictures taken in this way can well be related to either gnathostatic casts or cephalometric x-rays regardless of the size of the film used. It is only necessary to know the ratio of the dimensions of the picture of the subject because in this setup all pictures are taken at a fixed distance. By multiplying the dimensions of the photographs by the ratio, any desired measurements may be obtained.

The Frankfort horizontal plane can be taken from photographs taken in this manner, and the Frankfort horizontal plane may be taken from cephalometric x-rays and gnathostatic models. With this common base, all three diagnostic aids may be correlated.

There are many types of cameras on the market today: view cameras, reflex cameras, twin reflex, miniatures, and box cameras. Regardless of the type, all cameras are alike fundamentally in that they consist of a light-tight box with some method of holding the film in position at one end and a lens and shutter at the opposite. A camera for orthodontic use should have a long bellows extension so that close-up pictures may be obtained through the lens of a long focal length. The camera that has worked out most satisfactorily for me is a view camera which has an adapter back for bantam size film. Black and white or color may be used.

At this point, it is necessary to say something concerning illumination. For some unknown reason, most orthodontic photographs are done with flat lighting, and if there is any place that we do not want flat lighting, it is in orthodontic photography because we want the photograph to reproduce as nearly as possible the third-dimensional effect. For example, if we were to photograph a white ball in front of a white wall, we could make it appear as a flat disk, a dark disk, or a round ball with highlights and shadows. If the light were thrown on the ball from the source which is very close to it, the point nearest the light source would be most brightly illuminated and the parts farther away toward the sides of the ball would be dark. This is true because light varies inversely as the square of the distance. To apply this to orthodontic photography: if a light from a single source were placed too close to the subject, the high points, that is to say, the nose, chin, cheeks, and forehead would appear white and the other parts of the face would be black. This type of lighting is often used in horror

pictures in both the movies and magazines (Fig. 3). If a light is placed at a great distance from the subject, the skin tones would appear even, and the resulting picture would be flat and lifeless as may be seen in Fig. 4.

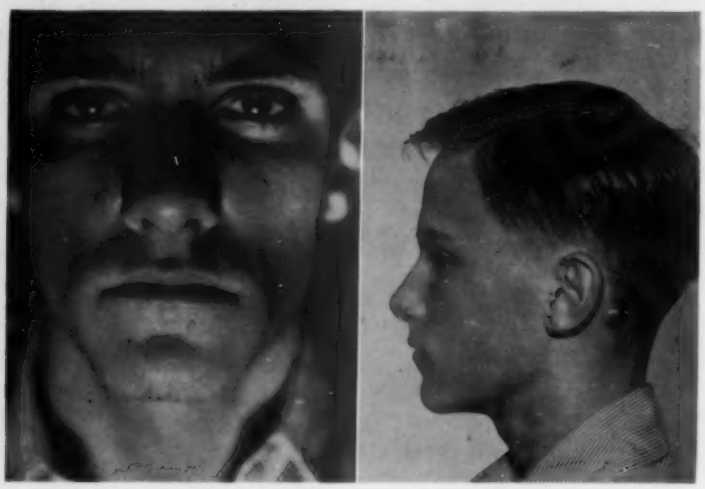

Fig. 3. Fig. 4.

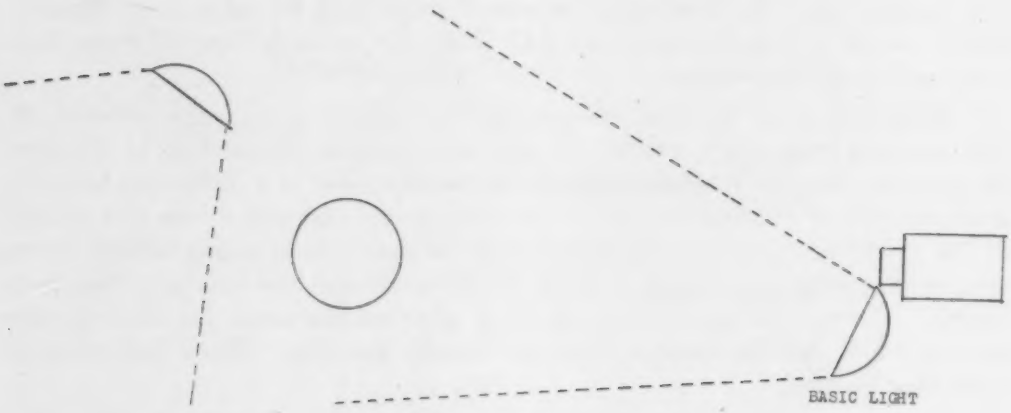

Fig. 5.

Lighting can be best illustrated by lighting a sphere. "Basic light," so-called by William Mortensen, an authority on pictorial lighting, is that type light which approaches as nearly as possible ideal condition of simple visibility which displays the image for its own sake and for its own merits. This light is basic in that it forms a fixed point of reference from which all other lights are derived and to which they are compared. The quality of basic light resembles somewhat the diffused illumination from a north skylight. There is one important difference, however; that is that basic light proceeds from a small point such as a bulb, instead of from a wide window. For this reason, basic light gives much greater crispness than the old skylight. Basic light is pre-eminently a form-revealing light and emphasizes the static and impersonal aspects of the subject. Fig. 5 shows this type of lighting.

Contour light is derived from basic light. The change is brought about by moving the light closer to the subject. This retains the delicate halftones which are present in basic light but gives added stress to the outline. The manner in which this altered setup accomplishes this added emphasis to the outline is shown in Fig. 6, *A* and *B*. The peculiarity of contour light may be summarized as follows:

First, the front unit is between the camera and the subject; and, secondly, the background and the subject are equally illuminated.

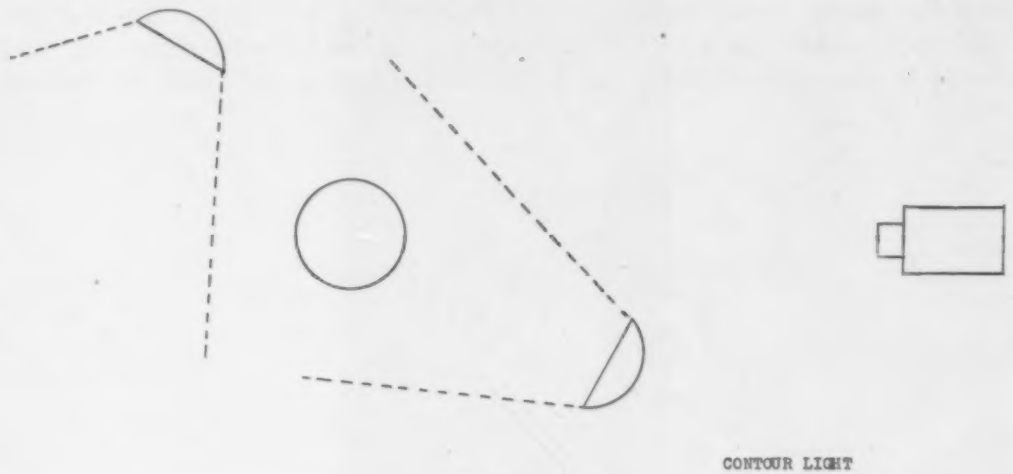

Fig. 6, *A*.

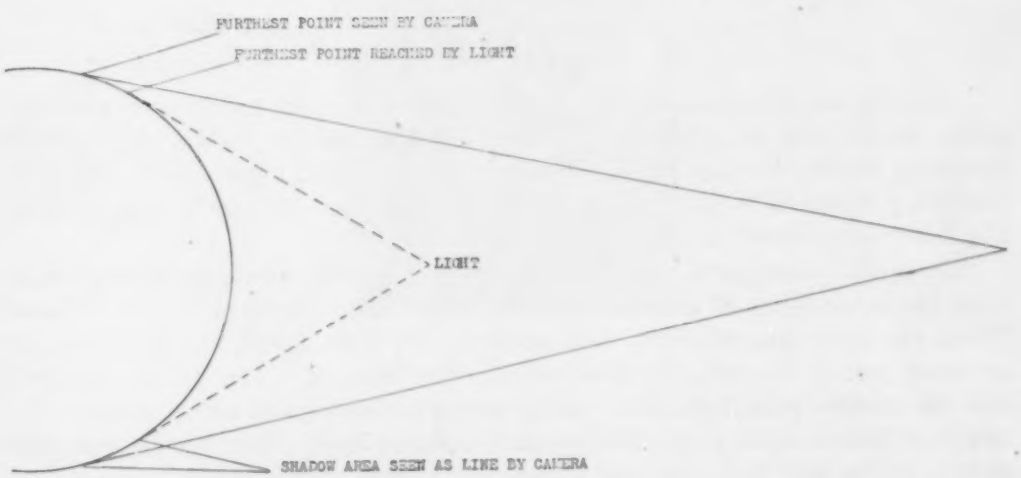
FURTHEST POINT SEEN BY CAMERA
FURTHEST POINT REACHED BY LIGHT
LIGHT
SHADOW AREA SEEN AS LINE BY CAMERA
PRINCIPLE OF CONTOUR LIGHT

Fig. 6, *B*.

There are various other types of lighting such as semisilhouette lighting, dynamic lighting, and plastic light. The plastic light is similar to contour light, the only change being that the light source is placed at a 45° angle from the central axis of the lens (Fig. 7). This gives us the type of lighting necessary in

profile photography. To sum up, there are three types of lighting which are useful to the orthodontist: basic lighting for photography for record casts or appliances, contour lighting for full-face photography, and plastic lighting for profile work.

The most desirable lighting for orthodontic photography would be known as contour lighting. It is the type of lighting in which the light is placed close enough to the subject so that the high points are fully illuminated but the shadows are also illuminated and appear luminous in the picture. Again in lighting a ball with this type of lighting, the ball would appear in such a way that the nearest point would light and there would be a gradual shading to a dark gray around its periphery. In the average orthodontic setup, the light would be approximately two and one-fourth feet to three feet from the subject.

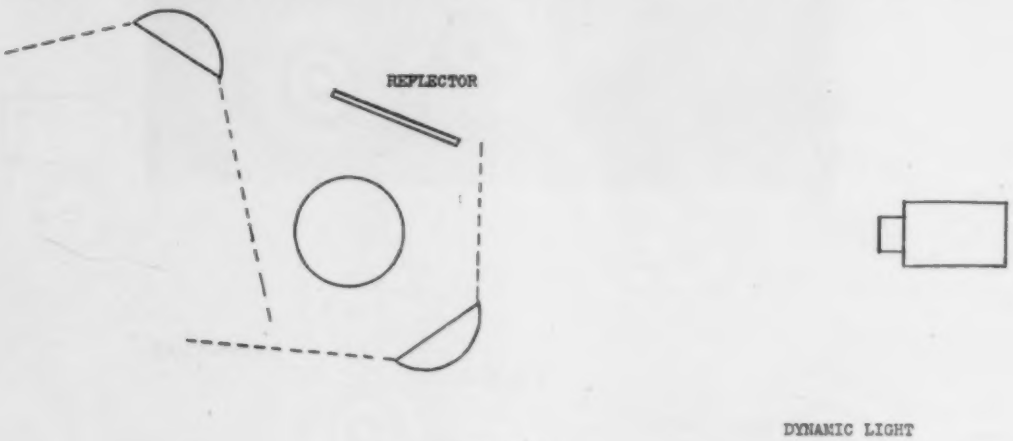

Fig. 7.

In full-face photography, the light should come from a source as near the center of the lens as possible. The best possible location for the light source would be within the lens itself. However, as this is an impossibility, the next best thing would be to place the light above the lens but as near to it as possible. Fig. 8 shows the result of this type of illumination.

In profile photography, the light should be placed at about the same distance from the subject but at an angle of about 45° from the central axis of the lens. When the lights are placed in this position, it will be found that the eyes and anterior part of the face are illuminated. The inferior border of the mandible and the posterior border of the ramus cast a shadow which nicely outlines the angle of the mandible of the subject in the photograph. This may be seen very clearly in Fig. 9.

All photographs, orthodontic or otherwise, are greatly improved if they have an appearance of space around them rather than an appearance of being plastered against a background which gives them a static appearance. To produce this third-dimensional effect, it is most essential that the background be perfectly plain and of a light color. The subject should be seated several feet away from the background and the background lighted so that it reflects about the same intensity of light as the face does. A light background is preferable

to a dark background which is so often seen in orthodontic photographs. It is preferable because it separates the outline of the subject's face from the area behind the subject. Portrait photographers often take advantage of a dark background in order to make a stout person look more slender because of the fact that the outline of the person blends with the dark background, and, therefore, it is less noticeable. However, that is just what we do not want in orthodonties.

Fig. 8.

I would like at this point to call attention to the results of both correct and incorrect applications of both light and lens. In Fig. 3 there are three misapplications of photographic principles. First, the lens used was of too short a focal length. As a result, it makes the nose appear much larger than the ears. This same defect may be noted in Fig. 10, a profile photograph, in which the ear appears larger than the nose.

To return to Fig. 3, there is not enough allowance made for depth of field. The cheeks and forelock of hair are in sharp focus, whereas the tip of the nose and chin and ears are out of focus. This could have been counteracted by stopping down the lens more. The incorrect lighting is already mentioned in the

previous paragraph. In the profile photograph (Fig. 10), we have an illustration of a case in which the light came from the right direction but was too far away, giving the picture a flat appearance. Here again the lens was of too short a focal length and it made the ear, which was nearer the camera, appear larger than the nose. It was improperly focused and gave a good rendition of the ear but a fuzzy rendition of the nose. This could have been corrected by stopping down the lens more.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

Fig. 13.

Fig. 4 is a case in which the proper lens was used and the proper stop was used but the light came from close to the lens and illuminated the ear and cast the eye in shadow.

Fig. 11 is the same picture. The only change that was made was that the light was brought to a 45° angle and the subject's head was tilted a little too much toward the camera.

Fig. 12 shows a good full-face rendition. The nose, forehead, and chin have good highlights, the skin texture is good, due allowance has been made for depth of field, and if a straight edge were laid across the infraorbital points, it would be found to be in line with the superior border of the auditory meatus.

Fig. 13 is a good profile picture which has followed all the rules of good photography and lighting. It will be noted that the depth of field is good and that the lighting has come from a 45° angle; it gives us some idea of the angle of the jaw; also the skin texture is good.

Many department store and chain store photographers do very acceptable work by having a fixed camera and lighting setup. The person who clicks the shutter need know very little about the whys and wherefores of photography. If this same idea were applied to orthodontic photography, it would be very possible for orthodontists or their assistants to turn out good clinical photographs with a minimum of experience and time consumption.

As I stated in my first paragraph, my own experience in failing to standardize photographs and of making poor photographs, even though I was at the same time winning prizes for salon photography, led me to seek out a standard procedure in orthodontic photography so that any orthodontic office might be able to produce consistently good results.

It is hoped that these humble efforts may be of some value to the profession until such time as some better method is devised.

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210 Main Street.

CASE REPORT

WILLIAM S. SMITH, D.D.S., SAN FRANCISCO, CALIF.

1. Title.—J. McC., girl, white, aged 11 years, 9 months.

2. Diagnosis.—There was a degree of micrognathia in the mandible and some contraction of both the maxilla and mandible. The upper teeth were forward in their relation to the skull. The mandible was in distal occlusion. The bite was severely closed. The roentgenographic findings showed the roots of the teeth to be of average length and the bone to be of fair calcification. The ortho-photos demonstrated the distal occlusion of the mandible and the lack of vertical development of the lower third of the face. The head films taken with the cephalometer and the tracings made from the same showed a lack of development throughout the mandible, and the rest position was great enough to hope that the bite could be opened and the growth centers in the mandible could be encouraged to show growth in the desired directions.

3. History.—Diet is excellent for her father is a physician specializing to a certain extent in nutrition and nutritional disorders. Both physical and mental development are good. Endocrine condition normal. Mother had all of her teeth and few restorations. Father had all his teeth and one filling. Slightly closed bite. Past diseases were measles, chicken pox, and the mumps. The tonsils and the adenoid tissues had been removed during the fifth year.

4. Etiology.—Thumb-sucking and mouth breathing.

5. Plan of Treatment.—Treatment objectives:

1. To open the bite.
2. To move all of the upper teeth distally.
3. To correct the irregularities of the upper and lower teeth.

Mechanics of treatment: Ribbon arch bracket bands were placed on the upper and lower cuspids and incisors. Tie bracket bands were placed on the lower first and second premolars. Bands were placed on the four first molars. A headcap was worn, with hooks to the lower arch wire, attached distally to the lower right and left central incisors. The headcap was worn twelve hours a day. Class II mechanics were used with stationary anchorage, established in the lower jaw by placing cleats on the lower arch wire at the cuspid brackets. Spurs were placed on the lower arch wire, mesial to the buccal tubes on the lower molar bands. Lingual crown torque was placed in the anterior part of the lower arch wire. Curved sheaths were used on the upper molar bands, aligned so that they would tip the molars and depress the upper anterior teeth. Class II intermaxillary elastics were used with torque and screw force, to move the teeth distally. Lingual crown torque was placed in the anterior region of the upper arch wire.

The use of cephalometric tracings made from the cephalometric head films in this treatment is very interesting. The accompanying cephalometric appraisal

This case report was submitted to the American Board of Orthodontics in partial fulfillment of the author's requirements for certification.

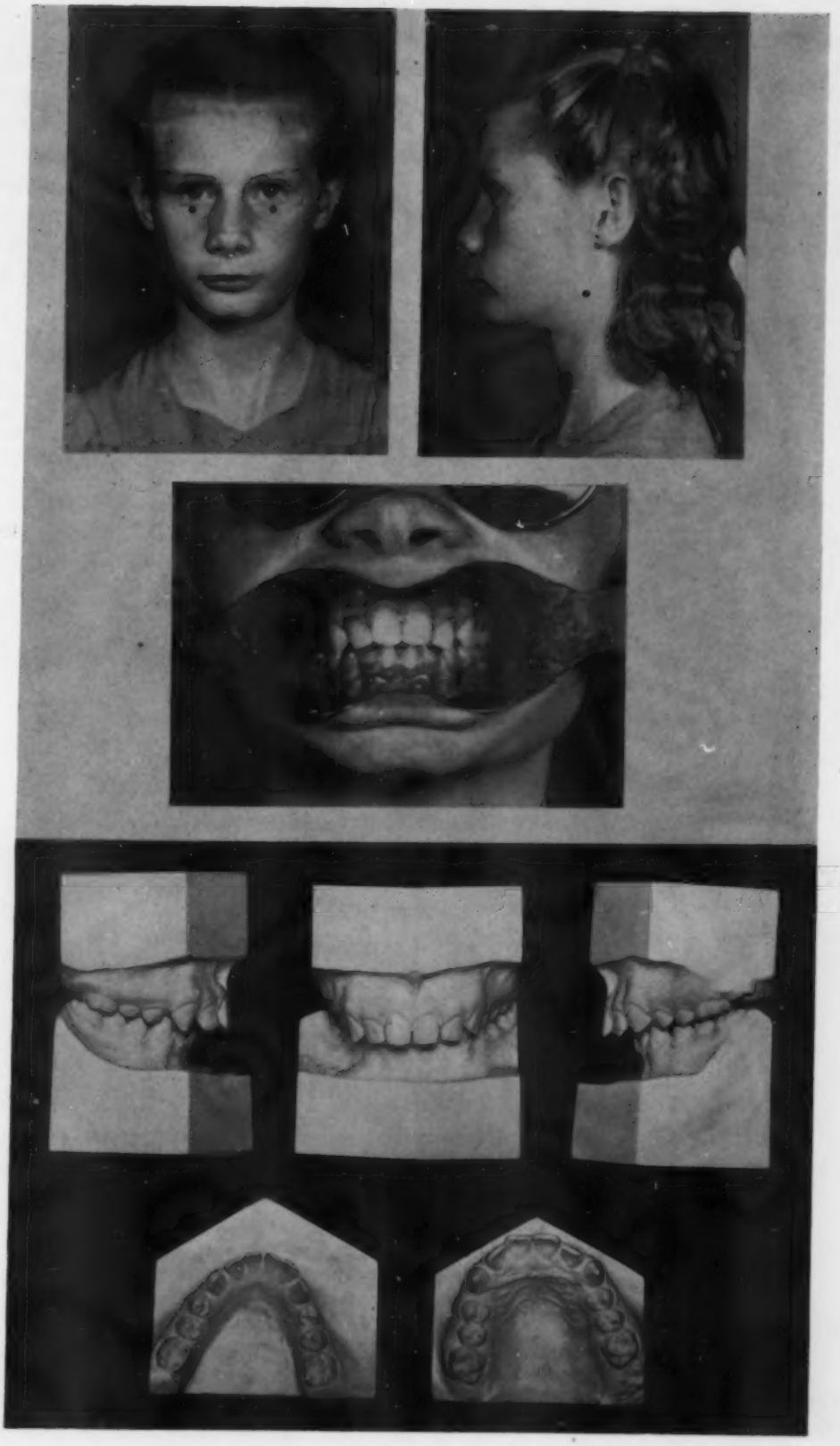
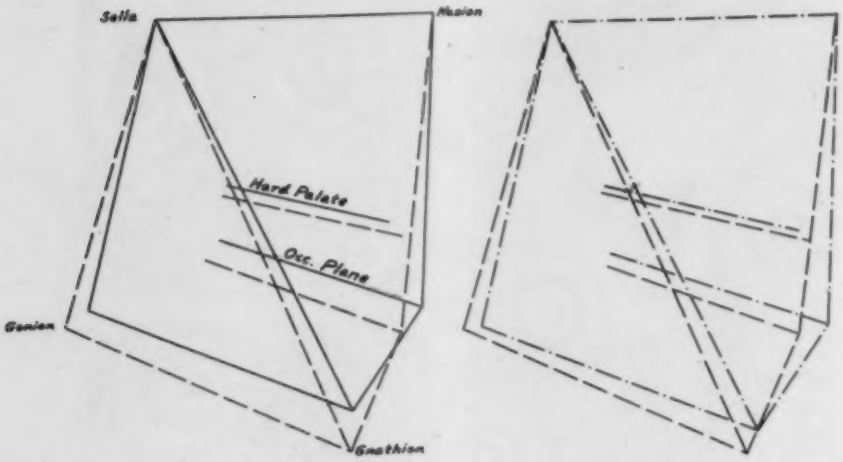


Fig. 1.

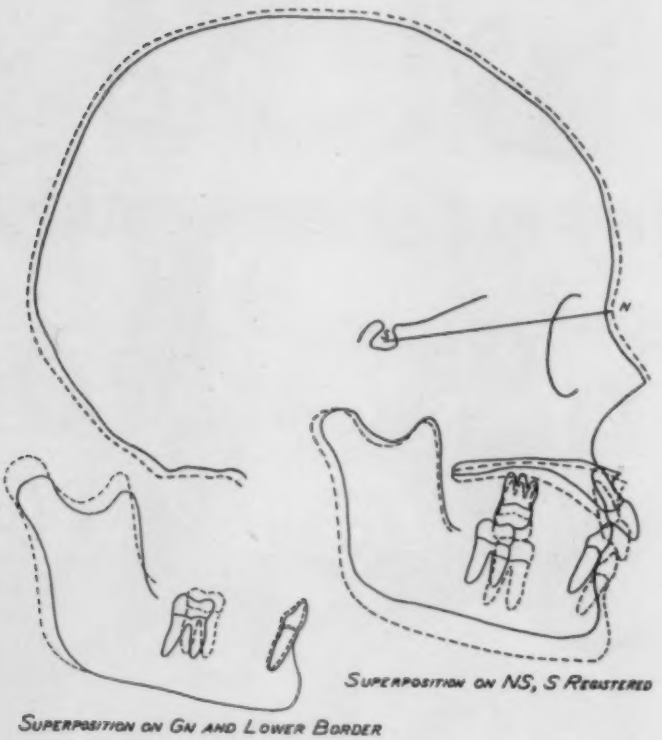


Tracings of J.M., ♀ Class II, Div. I

——— Facial Pattern Before Treatment.
—·—· Facial Pattern Which Would Have Developed Without Treatment.
— — — Facial Pattern Arrived at Through Treatment.

Dr. Wm. S. Smith, San Francisco.

Fig. 2.



Cephalometric Tracings of
——— 7-10-44
- - - - - 11-21-46

Fig. 3.

of the orthodontic treatment demonstrated the value of the head films and tracings in the diagnosis and treatment of orthodontic cases. The large freeway space shown in the head films allowed very desirable increases in the vertical dimension of treatment. The comparison of the measurements of various angles and planes demonstrates what has been accomplished in the active period of treatment. The drawings by Dr. Wendell Wylie, showing the changes brought about by the orthodontic treatment, when compared to the original tracings and to the theoretical drawing, show how the head and face continued to grow without the interference of orthodontic treatment.

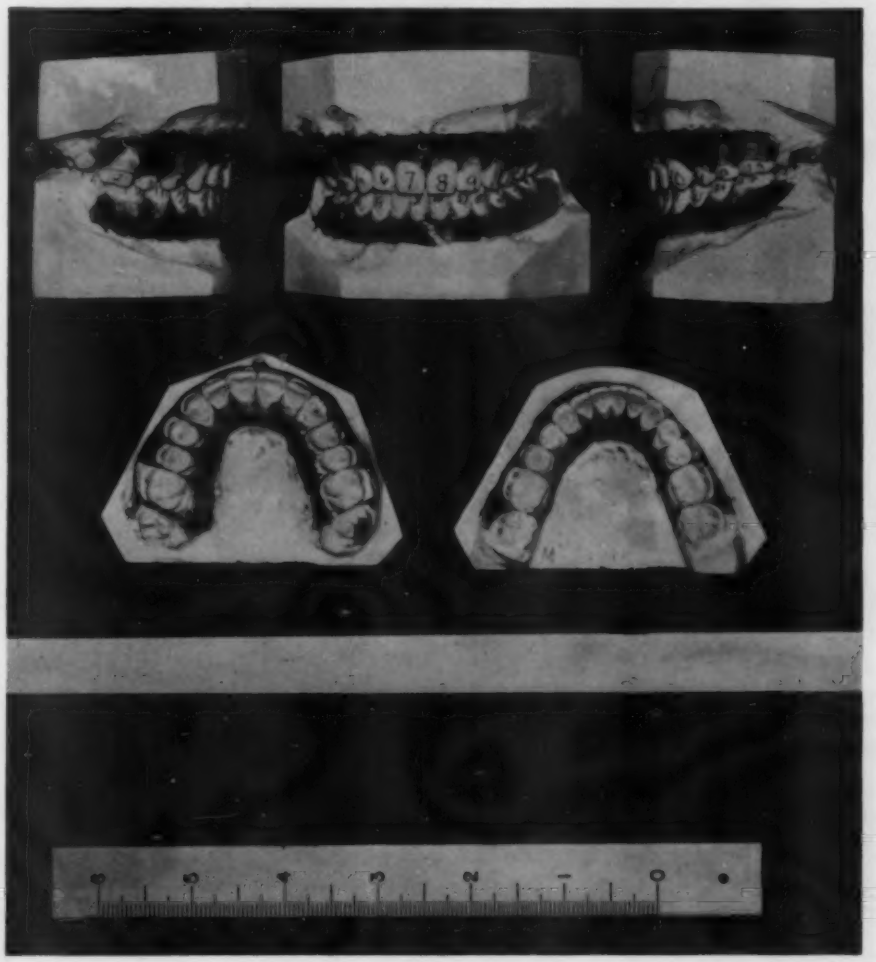


Fig. 4.

6. Progress of Case.—The patient visited the office for adjustments at two-week intervals for twenty-two months including one long summer vacation.

7. Secondary Treatment (Retention).—Kesling positioner was worn for one and one-half years.

8. Results Achieved.—The results obtained as shown by models, orthophotos, drawings, and tracings from the head films were excellent. Dr. Wendell

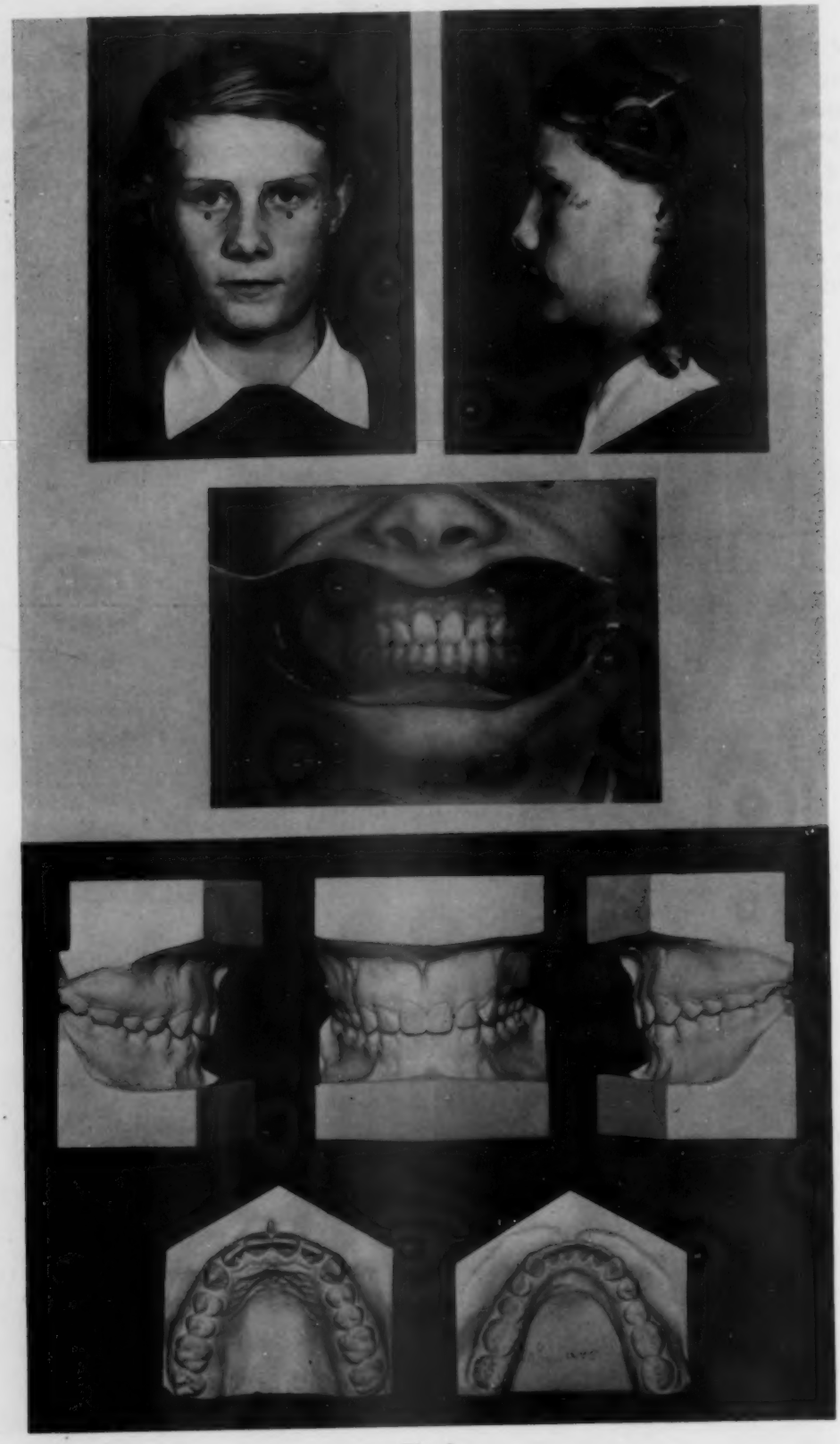


Fig. 5.

Wylie completed the cephalometric appraisal, and a copy of his report is shown in Chart I. The roentgenographic examination showed the roots and the bone tissue in normal condition. The patient did not cooperate well in the wearing of the positioner so the spaces have been slow in closing.

UNIVERSITY OF CALIFORNIA
COLLEGE OF DENTISTRY
DIVISION OF ORTHODONTICS

Cephalometric Appraisal of Orthodontic Treatment

To: Dr. William S. Smith
Patient: J. McC. Sex: Female
Presenting with: Class II, Division 1, closed bite.

		Ages
Dates of examinations:	7-10-44	11-9-18
	11-21-46	14-1-24

Interval: 2 years and 4 months

Treatment consisted of: Ribbon arch with extraoral anchorage and a positioner.

Dimension	*Before*	*After*	*Change*
Total face height (centric)	103.0	113.0	+ 10
Lower face height (centric)		56.5	+ 5.5
LFH / TFH × 100	49.5%	56.5%	+ 7%
Freeway space	4.5 mm.	------	------
Angle N-S-Gn	64°	66.5°	+ 2.5°
Angle N-S-Gn	103.5°	106.0°	+ 2.5°
Angle N-S-Gn	78.0°	78.0°	0.0°
Incisor-mandibular plane ∠	106.0°	106.0°	0.0°
Frankfort-mandibular plane ∠	15.0°	17.0°	+ 2.0

Relative roles of growth and treatment: See accompanying tracings. Very creditable changes were accomplished through treatment as may be seen by facial pattern which would have prevailed had treatment not been instituted and the facial pattern of the last examination. Treatment was, however, considerably facilitated by growth processes in the period of twenty-eight months. These changes affect not only the face but the cranium as well. Correction of mesial-distal arch relationship was accomplished by restraining the maxillary teeth in their normal downward and forward movement, while other facial parts went downward and forward.

Comment: The occlusal plane was not tipped as it usually is in Class II, Division 1 treatment. Very desirable increases in vertical dimensions may be expected to hold since freeway space was fairly large.

(Signed) WENDELL L. WYLIE.

Chart I.

9. Observations and Conclusions.—The diagnosis and the plan of treatment were correct as shown by the results. The cephalometric head films and the tracings are an excellent aid in this type of case for they indicated a large freeway space and with this knowledge we could plan to treat the case to open the bite with extreme measures and hope for growth in the desired directions.

10. Posttreatment Findings.—There are considerable growth and development in lower third of the face partly due to the opening of the bite and restoration of normal function. Head films and photographs will be taken again in a year.

I would like to express my thanks and appreciation to Drs. Wendell Wylie and William Elsasser for their aid in drawing the cephalometric head film tracings and their cephalometric appraisal, also to Dr. Frederick Schubert for the taking of the photographs.

450 SUTTER STREET.

CASE REPORT

WILLIAM S. SMITH, D.D.S., SAN FRANCISCO, CALIF.

1. Title.—R. C., boy, white, aged 11 years.

2. Diagnosis.—All of the teeth in the upper jaw are anterior to normal positions in the skull, and the mandible is in distal occlusion to the teeth of the upper jaw. There is a degree of macrognathia of the upper jaw and a degree of micrognathia of the lower jaw.

3. History.—The patient is large for his age and in good health with the exception of frequent head colds. His mother had protruding upper teeth; his father is wearing an upper denture and his lower teeth are irregular. No history of serious illness; childhood diseases: measles and chicken pox. Gingival tissues in good condition. Good diet. Deciduous teeth lost at a normal age. Cavities to be filled. Parents' teeth had many restorations.

4. Etiology.—Finger-sucking and mouth breathing, heredity.

5. Plan of Treatment.—Treatment objectives:

1. To open the bite.
2. To move all of the upper teeth to the distal and lingual.
3. To shorten the upper anterior teeth.
4. To place the upper left first premolar in a more normal position.
5. To correct the irregularities in the lower anterior teeth.

Mechanics of treatment: Ribbon arch bracket bands were placed on all of the upper and lower anterior teeth. Tie bracket bands were placed on the four lower premolars, and the upper left first premolar was banded with a ribbon arch bracket band. Square precious metal arch wire, 0.022 inch, was used as a labial arch wire on the lower teeth. A large ribbon arch with nuts and threaded ends was used on the upper teeth. Previous to the placing of the arch wires the four permanent first molars were banded and 0.022 inch by 0.022 inch square buccal tubes were placed on the lower first molars. Curved sheaths were soldered on the upper molar bands with considerable angle to bring about the tipping of the first molars and the shortening of the upper anterior teeth. When the lower anterior rotations had been made, cleats were soldered on the lower labial arch wire at the cuspid bracket bands, and spurs were soldered on the lower labial arch wire at the mesial of the buccal tubes on the lower first molars. Lingual crown torque was placed in the anterior region of the lower wire. Hooks were soldered on the upper labial arch wire between the upper lateral incisors and the cuspids. Intermaxillary elastics were placed on the teeth, and the nuts were tightened at frequent intervals. A headcap was made for the patient, hooks were soldered distally to the lower central incisors, and, with the use of large retraction hooks, the occipital anchorage appliance was used at night.

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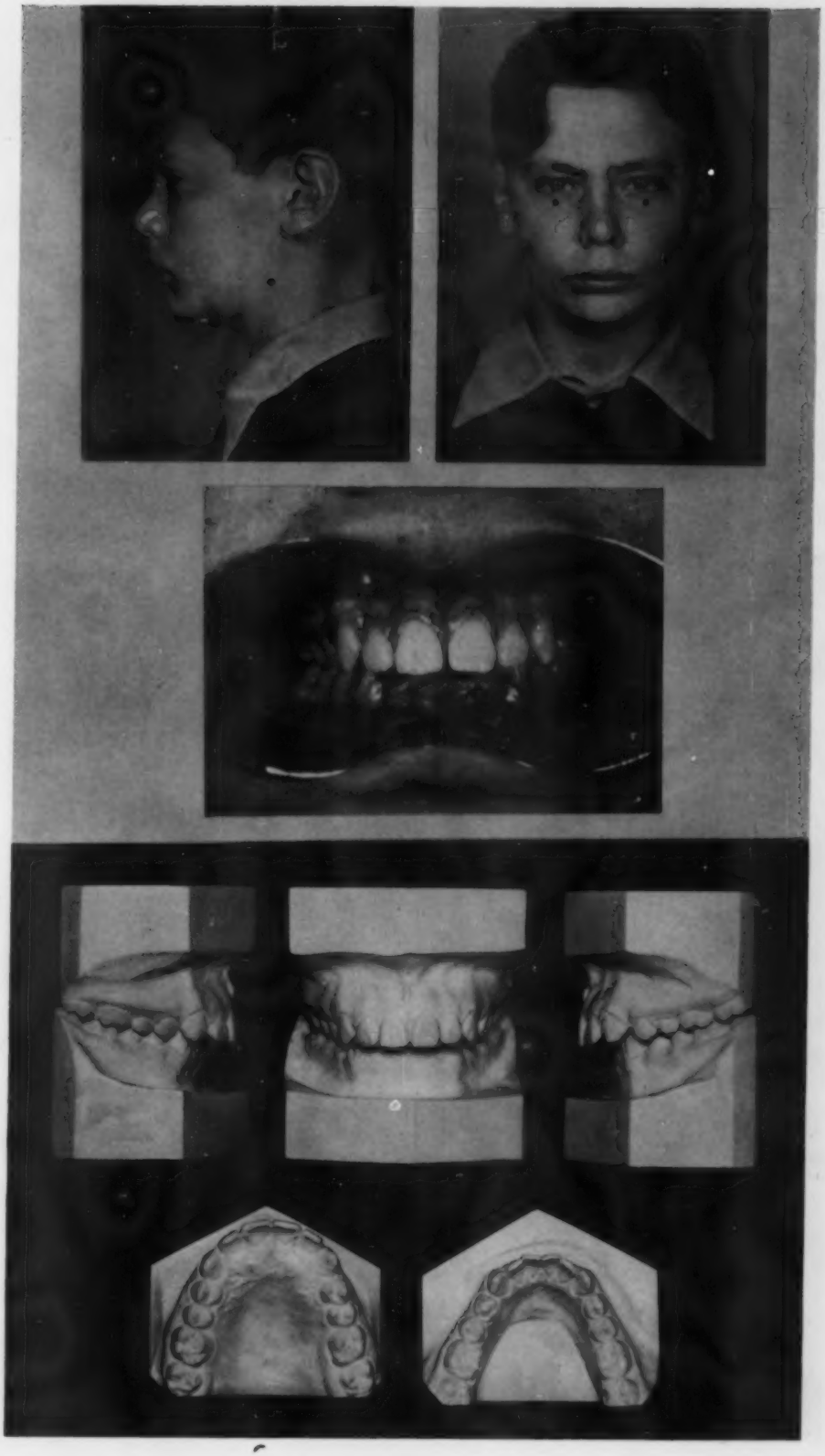


Fig. 1.

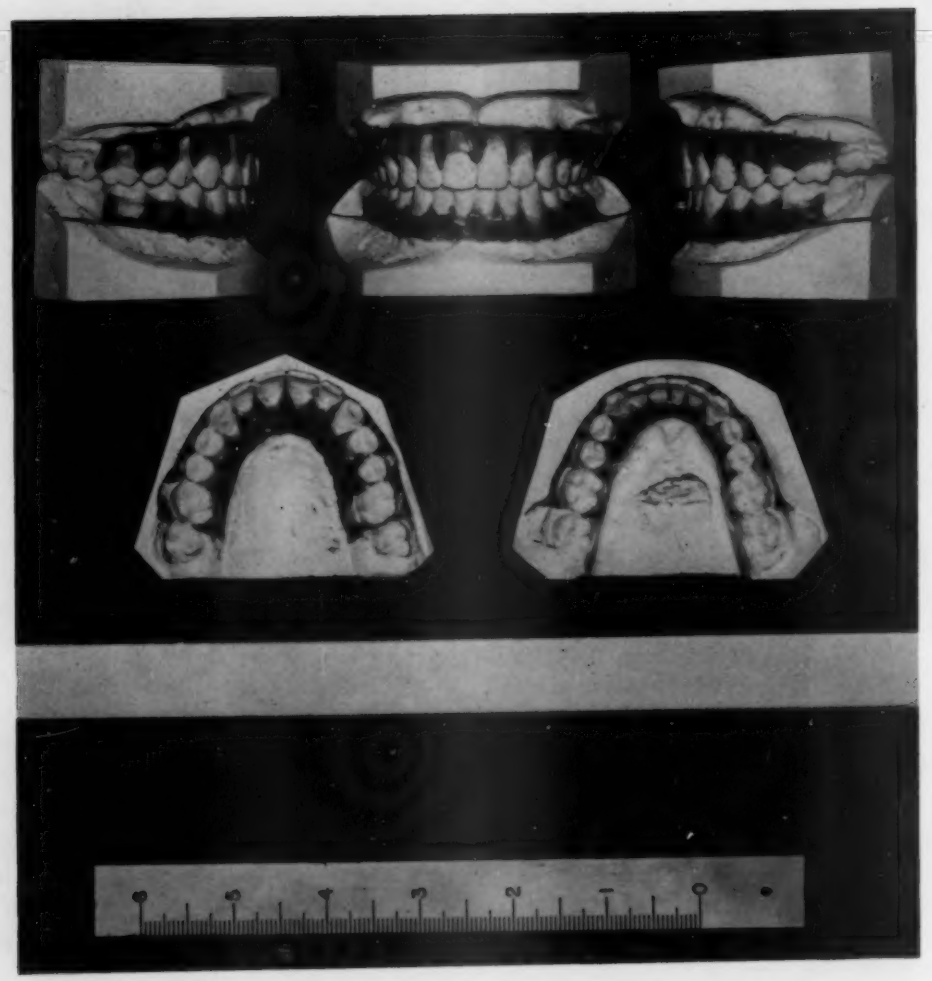


Fig. 2.

Fig. 3.

6. Progress of Case.—The patient was seen at two-week intervals for twenty-three months. His cooperation was very good.

7. Secondary Treatment (Retention).—Retention with a Kesling positioner plus orbicularis oris exercises.

8. Results Achieved.—The lower third of the face showed a definite vertical development. The upper anterior teeth and perhaps the anterior part of the maxilla have been placed lingually. The bite has been opened, the upper anterior teeth depressed. The irregularities of the upper and lower anterior teeth have been corrected. Orbicularis oris exercise has helped correct the mouth breathing.

9. Observations and Conclusions.—The diagnosis, plan of treatment, and treatment objectives were correct. The final results were gratifying.

10. Posttreatment Findings.—Roentgenograms and pictures four years after completion were taken.

450 SUTTER STREET.

CASE REPORT

ROBERT E. GAYLORD, D.D.S., M.S.D., DALLAS, TEXAS

1. Title.—Case 611, white girl, 11 years of age.

2. Diagnosis.—This case is of a Class II, Division 1, classification, presenting several features that even the first examination made doubtful the probability of a favorable prognosis. First, there was a complete cross-bite relationship wherein all the mandibular teeth were completely lingual in both buccal segments. In fact the lingo-occlusal surfaces of the upper first and second molars, both right and left, were even with the gingival margin of the buccal surfaces of lower first and second molars, both right and left. Second, both dental arches, in my opinion, were forward to basal bone. Third, there was a marked Class II molar relationship, and, fourth, the problem of discrepancy in arch width (Fig. 1). The one redeeming feature was the parents' and patient's desire for treatment, affording assurance of good cooperation.

3. History and General Clinical Picture.—The patient was a girl 11 years of age in good health. The prenatal history revealed that the period of gestation was entirely normal with an uneventful delivery. She was breast-fed three weeks, then placed on bottle. She sucked her thumb from 6 months to 2 years of age. Tongue normal in size; however, she thrusts her tongue against the upper lingual surface of her teeth during the act of swallowing. Measles and chicken pox were her only childhood diseases. Tonsils and adenoids were removed at 10 years of age. No accidents of any kind. Present state of health excellent. Mental development excellent. Posture good. Caries only in occlusal pits of first and second molars. Parents and sister all have good occlusion with very little irregularity manifested. However, paternal grandfather had a Class II, Division 1 malocclusion.

4. Etiology.—From a rather exhaustive study of the history I could find nothing too significant; however, there are several factors that I feel are worthy of consideration. If I were asked to give an opinion based upon my feelings in regard to the case after having completed it, I would lend considerable credence to the fact that her tonsils and adenoids were not removed until 10 years of age. Her mother stated she had numerous sore throats each year for many years, and finally her tonsils were removed upon the recommendation of a new pediatrician one year prior to my first examination. It is my feeling that this situation, in conjunction with the thumb-sucking, might have accentuated the distal positioning of the mandible, since I am reasonably sure the condition existed in the deciduous dentition even though I cannot prove it since no one could be found who had noticed it before she was 10½ years of age. It

This case report was submitted to the American Board of Orthodontics in partial fulfillment of the author's requirements for certification.

might be that abnormal intrauterine pressure initiated the situation and the other forces contributed to its continuance until the mandible was locked by the occlusion upon the complete eruption of the deciduous dentition. It is not too difficult to imagine that these factors could have played a major part in the etiology of this case. However, as stated before, I am not sure, and they are offered only as an opinion and for your consideration.

5. Plan of Treatment.—My first objective was to get the teeth into some sort of occlusion. The only possible way was to constrict the upper arch and expand the lower by uprighting and tipping. Second, position the arches in Class I molar relationship. If I could satisfy my ideas of treatment at this point I would stop; however, the possibility of extraction was considered from the first but was delayed because of a desire on my part not to jump too fast and because of the mechanical problems involved.

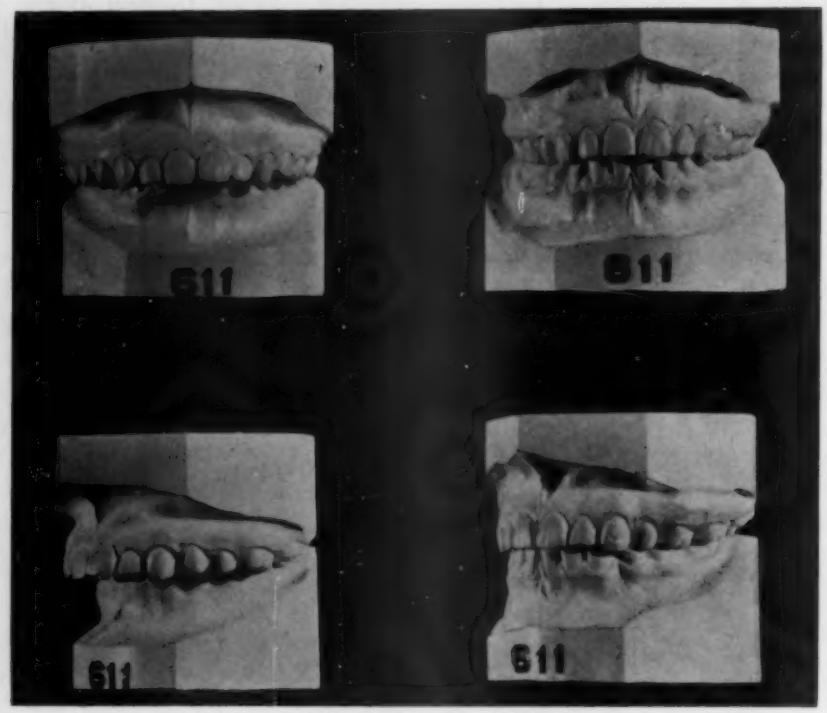
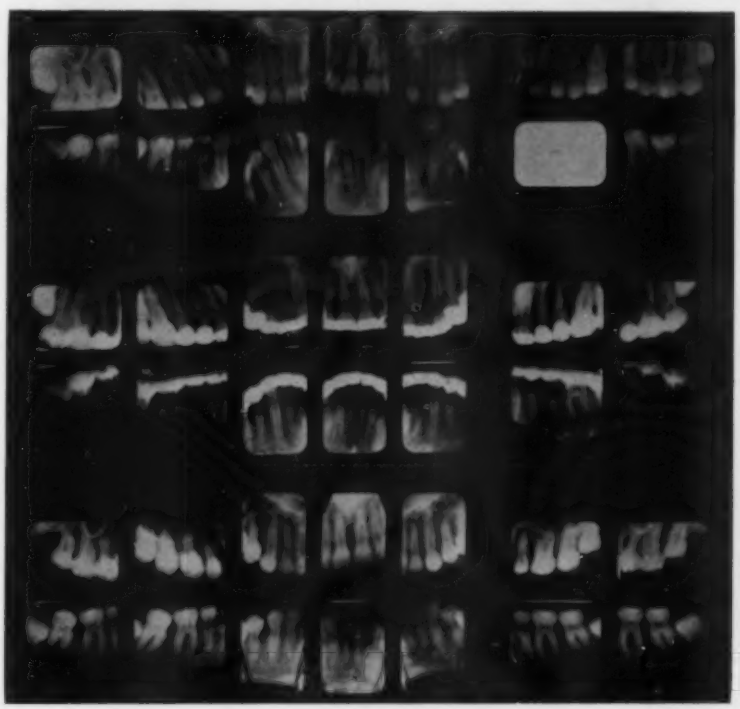


Fig. 1.

6. Progress of Case.—Case started Dec. 12, 1944. Acrylic bite plate placed in upper arch to help relieve occlusal interference. Bands with edgewise brackets and molar tubes placed on teeth of all buccal segments from second molars up to and including cuspids. Bands were left off lower and upper incisors so they could be disturbed as little as possible during the next few months. Round steel arch wires, 0.016 inch, were then placed in both upper and lower arches. Contraction in upper and expansion in lower. This was increased to 0.018 inch, then 0.020 inch. No rectangular arches were used during this stage. Acrylic bite plate worn until occlusal interference was at a minimum and was

trimmed each time to allow space for teeth in buccal segments to tip lingually. In conjunction with these mechanics intermaxillary hooks had been soldered on lingual surfaces of lower second premolar, first molar, and second molar on both sides. No hooks were soldered to upper bands as we utilized spurs soldered to the maxillary arch wires. Three elastics, starting with very light and ending with quite heavy, were worn on each side to aid the desired movements of the buccal segments. When the occlusal surfaces of the teeth of buccal segments came into contact with one another, bands were placed on the anteriors and mechanics utilized to correct the arch forms and to get a Class I molar relationship. Results to this point required seven months of treatment. X-rays at this point are shown in Fig. 2, *B*.



A.

B.

C.

Fig. 2.

After talking with the parents, it was deemed desirable and logical to reduce the tooth pattern for she was, I can assure you, horribly protrusive. She was given a two-month rest period and then the four first premolars were extracted. Cuspids were retracted; then the lower incisors were tipped into an upright position. Class III mechanics were employed as an adjunct to treatment here, assisted by a headgear to the maxillary arch. When the lower arch was consolidated, I used a headgear to support it while using Class II elastics. When I felt the upper arch was in good relationship, or balance, to cranial anatomy, I had her discontinue the headgear to the lower and let the Class II elastics continue for the purpose of interdigitation. Six weeks later elastic traction was discontinued and arch wires were removed for a period of one

month. I do this routinely to see what happens as it guides me in my retention planning and determines whether further treatment is deemed necessary. She returned in a month, and she looked good with no marked change evident.

7. Retention.—At this point I removed her appliances (Oct. 21, 1946). This was twenty-two months after starting. This time included the two months rest given her between treatment stages. X-rays are shown in Fig. 2, *C*.

Fig. 3.

Kesling positioner was placed and worn for six weeks or approximately four hundred hours. Then this was discarded and upper and lower Hawley retainer placed, and she was told to wear it nightly. She did this until May, 1947. Models and photographs taken January, 1948, show the case eight months out of retention (Fig. 1, *B*). Note the upper left third molar is erupting and I have the feeling that all four will erupt normally. However, the case will be followed and further records will be secured to substantiate or disprove my beliefs. When the patient was seen in June, 1948, both upper third molars have erupted and the teeth are continuing to look good.

8. Results Achieved.—No question could be raised as to the improvement in function and I do not believe anyone would say that there has not been an

improvement in facial esthetics. Full-mouth x-ray shows very little scarring; however, as when evaluating any major operation on the body, facts should be studied and in so far as possible the operation should not be attempted unless advantages outweigh the disadvantages. In this case I feel we have accomplished that state of balance (Fig. 3).

9. Observations and Conclusions.—This case was selected for this presentation because of its unusualness, certainly not for perfection of results obtained, for, as all of you can see, there are things still to be desired in the end result. However, a great deal has been done, and I feel very, very fortunate in that I had a wonderful and cooperative patient, for without her help I would have certainly floundered.

25½ Highland Park Village.

A SIMPLIFIED PLAN FOR OBTAINING ORTHODONTIC PHOTOGRAPHS

MILTON NEGER, A.B., D.D.S.,* NEWARK, N. J.

THE photographic record of the orthodontic patient is today an accepted and required adjunct in the practice of orthodontics. By means of scale photographs, changes and improvements in the dentition with the associated changes in facial contours can be recorded and demonstrated with much accuracy, while the patient is undergoing treatment.

In 1926 Dr. Paul W. Simon introduced the photostatic picture.[1] He contributed an excellent method of making measurements on the photograph of the patient so that we are able to have an accurate procedure in examining dentofacial changes resulting from orthodontic treatment. Skin markings were placed on the face of the patient, prior to photographing, in the region of familiar cranial landmarks. The orbitale, gonion, the gnathion, and tragion were indicated by integument markings and photographed. Later, these points served as a means of the placement of the Frankfort horizontal plane, the gonial angle, and other valuable measuring lines on the photo.

Some of the methods described in our orthodontic textbooks[2, 3, 4] for taking the photostatic photo require the use of a rather elaborate setup, with a large view camera, and a tripod holding an extension device to maintain the exact "patient to camera" distance. Many orthodontists do not take these valuable photographs because of the difficulties encountered and the great time consumed in getting this very exacting photographic setup. To simplify this procedure and to make scale photography more accessible to every orthodontist, a new method has been devised and is presented in this article.

FEATURES OF NEW PLAN

1. The usual maintenance of the patient and camera at an exact and predetermined distance is entirely eliminated.
2. Equipment can be portable, adjusted, and removed with ease after taking photos.
3. The size of the camera is not important, or the size of the negative.
4. Each photo can be made to an exact scale.
5. Printing of the photo from negative is made with an enlarger.

SKIN MARKINGS AND MEASURING POINTS

In this plan one is not concerned with setting up the camera at an exact and predetermined distance from the subject. Instead, "measuring points" are made as follows (for the full-face view): With a *black, indelible,* water-soluble pencil make two circular dots for the two orbitalia (lower border of

*Attending orthodontist, Beth Israel Hospital.

orbit just below the pupil). These measuring dots should be large and well defined. Place the points of your dividers on the *inner* margin of the circular skin markings (Fig. 1). This measurement is determined by placing the divider points on a millimeter rule. Record this information in a small notebook set aside for photographic purposes. The distance recorded is referred to as the "interorbital distance."

Fig. 1.—Dividers placed flat against patient's face in position for measuring the interorbital distance.

TAKING THE PHOTOGRAPH

In the next procedure, the camera is set up before the patient. You may use any camera from a 35 mm. miniature camera to a 4 inch by 5 inch view camera. Cameras with means of examining the image through a ground glass are desirable because they insure a sharply focused negative. Be certain your camera is not too close to the subject, so that you may get a picture free from distortion and with good perspective. Cameras, regardless of size, should have a lens of long focal length in order to insure the proper rendition of the subject. The patient should be seated in a chair with a headrest so that the head is positioned with the Frankfort horizontal plane parallel to the floor.

Excellent portraits can be obtained with a 35 mm. camera, if a 90 mm. lens is used. To quote H. W. Zieler in the *Leica Manual*[5]: "Some photographers are of the erroneous opinion that for portrait photography the miniature camera is altogether unusable. This assumption is wrong. In fact, the miniature camera can produce portraits with a perspective which is identical to that which

we find in portraits taken with cameras of larger negative size." The point here is not necessarily to advocate the use of 35 mm. cameras for photostatic photography; but rather to show that any camera equipped with a lens of long focal length may be used to produce the desired photostatic photo.

NEGATIVE PROCESSING AND PRINTING

After the picture has been taken the negative is processed. Examination of the processed negative viewed on an illuminated x-ray box shows two well-defined white dots under the eyes. The latter points are very important, as shall later be shown, in obtaining the exact photostatic picture.

Fig. 2.—Method for procuring the photostatic photo where the projected negative image is increased or decreased until the pre-set divider points indicate one has arrived at the scale size desired.

The printing of the negative is done by means of a projection printer, or an enlarger, as it is more commonly known. Have your dividers, millimeter rule, and the photographic data notebook with you before you enter the dark-room. Place your negative in the negative carrier of the enlarger. From the notebook get the interorbital distance which you had recorded before photographing the patient and set your dividers with the aid of your millimeter rule to the proper opening. For example, if your interorbital distance measured 60 mm., you should adjust the divider opening that distance if you wish to

reproduce an exact life-size photo. By means of the enlarger adjustment knobs, you can easily raise or lower the enlarger head or the lens board, thus increasing or decreasing the image size. Place the divider points on the projected image until you have adjusted the enlarger, so that the interorbital distance is 60 mm., the very same distance which was measured on the patient's face (Fig. 2). Your projected image is now exactly life-size. Be sure that the divider points touch the *inner* periphery of the projected white dots. Then make your print in the usual manner by placing the sensitive printing paper on the baseboard and exposing it.

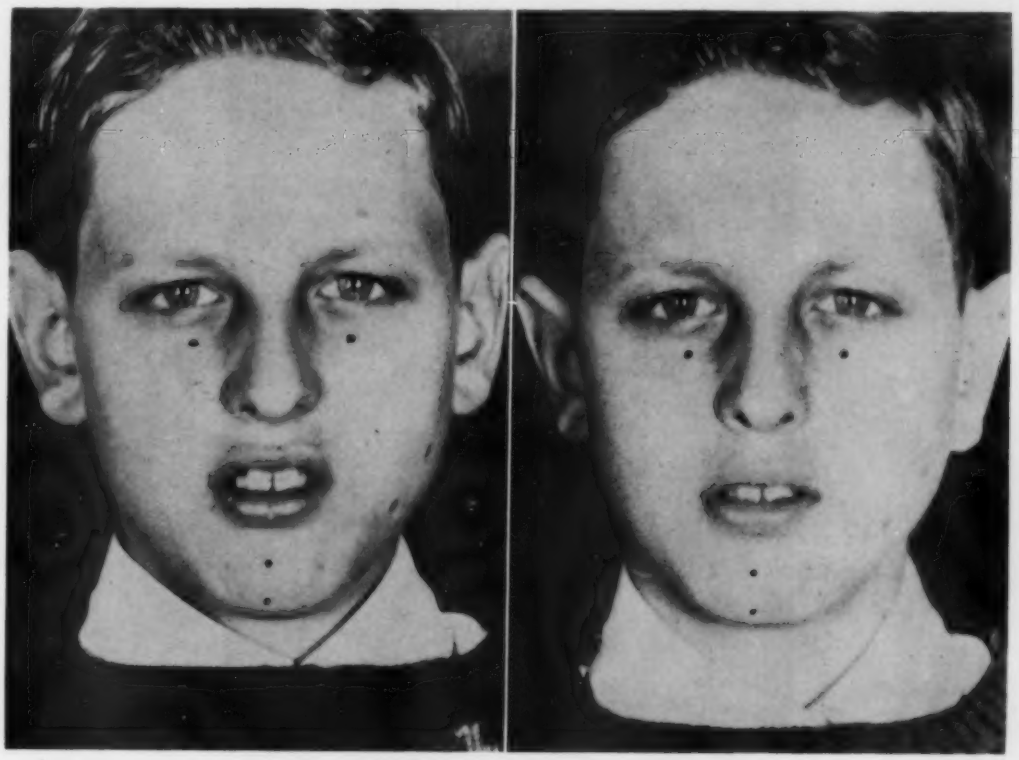


Fig. 3. Fig. 4.

Fig. 3.—Enlarged from a 3¼ inch by 4¾ inch negative.

Fig. 4.—Enlarged from a 35 mm. negative. Photos are purposely placed side by side to show how each one can be made to the exact scale size in spite of the great variation in the original negative sizes.

It is usually not necessary to enlarge the projected image to full life-size. One-half life-size, or one-fourth life-size, is all that is required for a photostatic photo. Using the negative with a 60 mm. interorbital distance, set your divider points 30 mm. and 15 mm. apart in order to give you photographs one-half life-size and one-quarter life-size, respectively.

Figs. 3 and 4 are reproduced to show how it is possible to enlarge photos to the exact scale size by following this method, although they vary greatly in their original negative size. Fig. 3 is an enlargement from a 3¼ inch by 4¾ inch negative, whereas Fig. 4 is the same size enlargement made from a small 35 mm. negative.

PROFILE PHOTOS

Essentially the same plan as described previously is followed for the profile photo. The gonion and the tragion are selected as the measuring points, since they are approximately in the same plane. Dividers are placed on these points at their inner peripheries, and the measurement is made on a millimeter rule and recorded in the photographic data book (Fig. 5). For convenience in recording the data, this distance is referred to in this paper as the "tragion-gonion" distance. The photograph is taken of the subject. The procedure from here on follows exactly that which has been described already for getting the full-face photostatic photo.

Fig. 5.—Placement of divider points for making profile photo measurements. Upper beak placed on inner circular marking at tragion point; the lower beak placed on inner rim of marking placed for gonion point.

INTRAORAL PHOTOGRAPHY

A certain amount of difficulty was encountered in making the selection of the two skin measuring points in taking close-up photographs of the teeth, since the mouth retractors, when applied, stretched the adjacent tissues. After much experimentation, it was observed that the skin in the region of the symphysis of the mandible remained relatively immovable when mouth retractors were used; therefore, this region is used for the placement of the measuring points. Vertically aligned points approximately 12 mm. apart were placed on the skin of the chin with the black, indelible pencil. These measuring points are referred to as the "chin points" (Figs. 6, 7, and 8). Be sure to check your measurements with dividers when retractors are stretching the oral tissues to be certain

Fig. 6.

Fig. 7.

Fig. 8.

Figs. 6, 7, and 8.—Vertically aligned chin points placed on subject for the various intra-oral views. Trimming of the lower part of the photo should be done if the black marking dots are objectionable.

you have the accurate distance between chin points, when photographed. After the scale picture has been made you may crop off the chin section containing the measuring points, if they prove objectionable.

ORTHODONTIC CASTS

Orthodontic casts may be photographed to any set scale by indicating measuring points on the front of the casts. Two black dots are marked on the casts, and the dividers are used to measure the distance between the markings (Fig. 9).

The side views of the casts are photographed the same way after the measuring points have been inscribed with the black, indelible marking pencil on the casts and the distance between points measured in millimeters (Fig. 10).

Fig. 9. Fig. 10.

Figs. 9 and 10.—Orthodontic casts marked with the black indelible pencil at the measuring points. Divider points placed for front and side measurements, respectively, prior to taking the photograph.

ELIMINATION OF MEASURING POINTS ON PHOTOS

If the measuring point markings prove objectionable on the finished print, these dots may be removed by using Farmer's Reducer, a mixture of hypo and potassium ferricyanide. Lootens[6] describes the technique of the removal of black spots on the print surface in good detail in his famous book on enlarging. Some photographers can remove black spots on the print emulsion surface by carefully scraping the print with a razor blade. The latter procedure would be more effective on a matte surface print than the glossy print.

BLACK AND WHITE PHOTOSTATIC PHOTOS FROM COLOR TRANSPARENCIES

Through the medium of this new plan for photographing the patient, whereby measuring points are made on the skin and the distances in millimeters are recorded prior to taking the photo, Kodachrome or Ansco color transparencies can now be used to reproduce scale black and white prints. It is now

possible to reproduce an exact one-half or one-quarter life-size black and white print from a 35 mm. color transparency. The larger-sized color transparencies made from roll and sheet film may be used as well.

In order to obtain an exact photostatic picture in black and white from the color transparency, we must make an intermediate negative.[7] This is best done by placing the color transparency in an enlarger and projecting the image on a 2¼ inch by 3¼ inch or a 3¼ inch by 4¼ inch film pack. The film is processed in the usual manner. Once you have your black and white negative you place it in an enlarger and repeat the process as has already been described. With the aid of measuring points on the negative image it is a simple matter to make a photostatic reproduction.

It is usually the preferable procedure to make black and white prints directly from panchromatic or orthochromatic film, where the utmost in tone and definition is desired. However, by the simple process of making measuring points before taking the photo and recording the distance measured, it is possible to get a good photostatic, scale picture when one has limited his photography to the taking of color transparencies. This, of course, is a big help when black and white prints are required for presentation for publication in dental journals.

CONCLUSION

Photos taken for the purpose of recording orthodontic progress must maintain an exact scale relationship in order to have value for the orthodontist. Heretofore, many of the accepted methods have been complicated and time-consuming. The plan submitted in this article is designed to simplify procedures and to encourage the use of the photographic medium in more orthodontic practices. This plan can be applied to all phases of orthodontic photography, where exact scale photos are required. The plan is essentially as follows:

1. Two points are marked on the object or person to be photographed.
2. A measurement is made of the distance between the points and is recorded for future reference.
3. The photograph is taken with any size camera, provided the lens is of the proper focal length for good subject rendition.
4. The negative is processed and is placed in the enlarger, where the two markings and their recorded measuring point distance assist one in printing the photograph to any scale desired.

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301 Clinton Avenue.

THE ANGULATOR—AN INSTRUMENT FOR MEASURING THE FRANKFORT-MANDIBULAR PLANE ANGLE

MAURICE J. SAVITZ, D.D.S., BOSTON, MASS.

THE angulator is a simple device for measuring, directly on the head of the patient, the Frankfort-mandibular plane angle for orthodontic diagnosis. It gives the measurements immediately—they can be read on the protractor which is part of the instrument. It will also give the distance from the tragion to the point where the Frankfort and mandibular planes intercept each other somewhere behind the head. Dr. Tweed was the first to describe the importance of this angle in orthodontics.

The Frankfort-mandibular plane angle is somewhere in back of the head, formed by the intersection of the Frankfort plane which is aligned from the orbitale to the tragion with a plane tangent to the lower border of the body of the mandible.

INSTRUCTIONS FOR THE USE OF THE ANGULATOR

Place the patient upright in the chair. Put the short arm of the angulator under the lower border of the body of the mandible on the left side so that the protractor is in an upright position in back of the head. Press it upward toward the mandible with your right hand and hold it tight. With the left hand, hold the end of the ruler and move it back and forth until you have the upper margin of the ruler on the Frankfort plane. (Fig. 1.) Now read the Frankfort-mandibular plane angle on the protractor. You may also read on the ruler the measurement from the tragion to the point where the Frankfort plane intercepts the mandibular plane somewhere in the back of the head.

In conclusion, it is a very simple process and can be used for preliminary diagnosis at the patient's first visit.

DESCRIPTION OF THE ANGULATOR

The main part of the angulator is made of a piece of sheet aluminum 16½ inches long, 2 inches wide, and 1/16 inch thick. Draw a line lengthwise in the center. Facing you, cut along the line from the left to right twelve inches and then down. Remove lower part. Bend up the 4½-inch piece left on that line to make a 90° angle with the other part of the metal. This part that is bent up is for placing under the lower border of the mandible. One-half inch from the left on the center of long piece, make a ⅛-inch groove 8½ inches long to the right. This is the main body of the angulator.

The sliding part is made up of a piece of aluminum 2½ inches by 1½ inches, same thickness as above. Round off bottom and top as in drawing. In center a strip ⅛ inch wide is riveted on for fitting into the slot of the main

Fig. 1.

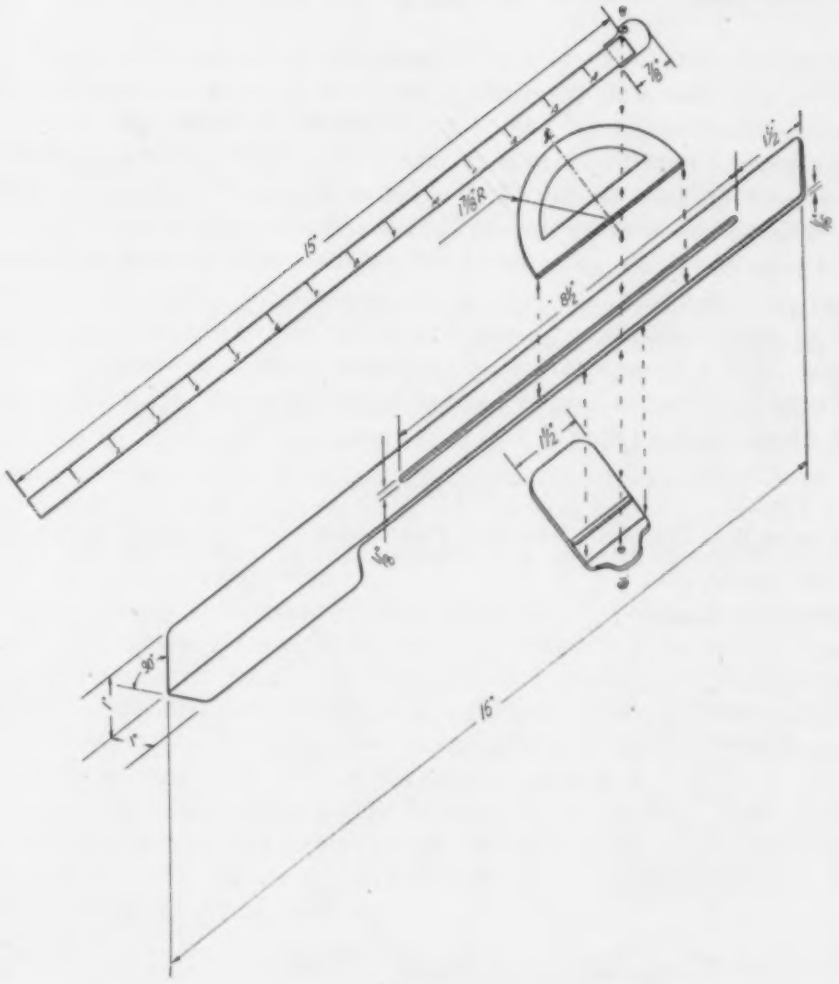

Fig. 2.

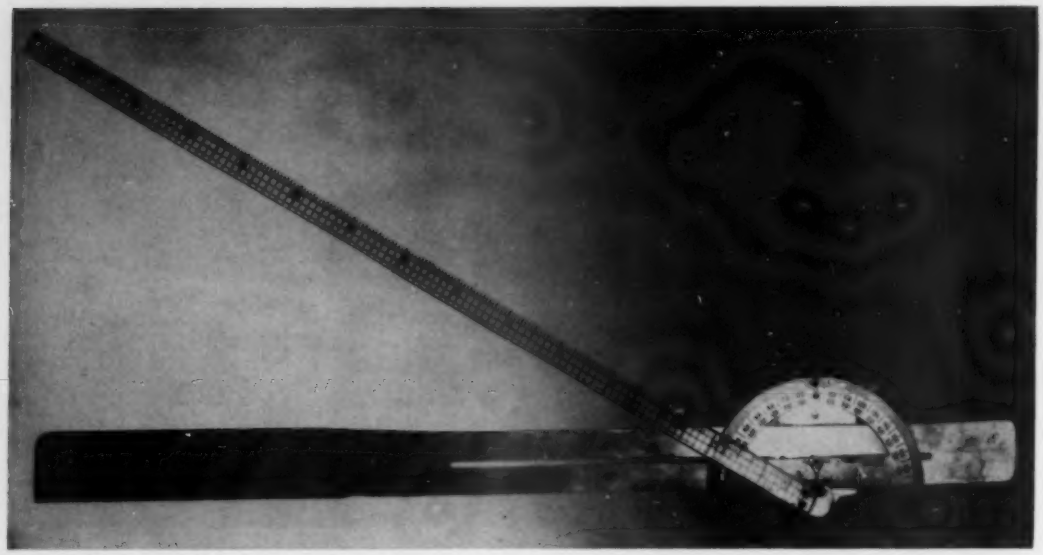

Fig. 3.

body of the angulator. Place this sliding piece with the riveted part in the slot. Rivet two pieces to the sliding part, one above and one below on the main body of the angulator. Take a 2- inch protractor and rivet to upper part of sliding piece. For the ruler part take a piece of aluminum $\frac{7}{8}$ inch by $\frac{5}{8}$ inch wide and $\frac{3}{32}$ inch thick. Cut out as in Fig. 2. On the part where the ruler is attached cut it to $\frac{1}{2}$ inch thickness and rivet end of ruler to that part so it will come to the center of that part. Make a hole $\frac{1}{16}$ inch in diameter in the metal part that holds the ruler at the upper right corner of the ruler. In the sliding part, make the same size hole in the center of the lower part of the protractor. Use a screw and bolt of the same diameter as the hole. The ruler should be 12 to 15 inches long by $\frac{1}{2}$ inch wide. Assemble it according to drawing and photograph. (Figs. 2 and 3.)

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THUMB- AND FINGER-SUCKING BY CHILDREN

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MANY ill effects can be attributed to thumb- and finger-sucking. This objectionable habit:

1. Causes abnormal development of the maxillae and/or mandible depending on the position of the thumb in the child's mouth.
2. Leads to mouth breathing which in turn promotes an underdevelopment of the nose and upper lip.
3. Diminishes the important "gag" reflex.
4. Is certainly responsible for many open-bite deformities which in time become ugly and require extensive orthodontic treatment to correct.
5. Is considered a factor influencing the overgrowth and enlargement of tonsils.
6. Nearly invariably displaces teeth.
7. Frequently causes callous formation on the thumb.
8. When the habituate presses hard on the bony structures of his palate he frequently causes an excessively high vault or mouth arch and other deformities which along with the displacement of teeth may produce speech defects.
9. Lastly, in adult life it creates difficulties for satisfactory artificial teeth replacement when and if the teeth are finally lost.

Should artificial sucking be looked upon as a habit related to masturbation? We have no information with which to state that children who suck thumbs, fingers, or artificial substitutes masturbate in later life more than nonsucking children, but there is the supposition that this is a fact. It is true that artificial sucking and masturbation are both habitual manipulations of the body which are pleasurable and bring about abnormal growth. Since habits such as these do not disappear in the large majority of instances without restraint, it is wise at a very early period in the child's life to make these habits impossible by whatever method seems most effective.

Teeth in young children are readily displaced by pressures of various sorts, and they may resume their original normal positions in time when the pressures are eliminated at early ages. The habit of thumb-sucking usually becomes established during the first few months of a child's life when it is the easiest to use some restraint such as boxing gloves, elbow splints, individual thumb and finger guards, or the closing of the ends of the sleeping garments.

If the habit is allowed to persist beyond the first year of age, it is likely to run a long course even into adult life. If the habit is not controlled after 1 year of age, then any finger or thumb on either hand or a combination of fingers may be used to satisfy the desire to suck.

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Between the ages of 2 and 5 years if the children are restrained from sucking thumbs or fingers they frequently may develop the habit of tongue- or lip-sucking. In case tongue- or lip-sucking occurs, it is then necessary to have a dentist construct a restraining or inhibiting sucking device that must be placed in the mouth, making impossible these sucking habits.

Sucking habits are closely associated with sleep; therefore, children suck only when falling asleep or during sleep. The pressures that are exerted upon the teeth and jaws during this period of falling asleep have an effect upon the bony growth and development of the jaws for a period of twenty-four hours after the discontinuation of the suckling. Pressure always stimulates bone cells to tear down and build bony tissues, and it is the principle of all regulating appliances used to correct deformities of the face and jaws.

Any pressure which results from the adjustment of regulating appliances, leaning or sucking habits is not like turning a faucet, which can be controlled, on and off, but is more like the effect of a small wave started in a large body of water which takes many hours before it reaches the opposite shore, grows in size and intensity as it continues and is counteracted only by wasting itself upon the sands or meeting other resistances.

Parents should be instructed as to the harmfulness of all habits and their relationship to dental deformities, their effects upon normal growth of the facial features, and the possibilities of their relationship to habitual masturbation.

The application of mechanical restraints, bitter-tasting substances, adhesives, or any other means devised should be encouraged. Devices such as these should be considered kind, as they will help to make possible normal growth and development so that the child as he matures will be able to take his rightful place in society without disfigurement, and which, of course, also results in an economic savings to the parent.

Early restraining of children, as well as other legitimate denials as they grow older that are not in their best interest, will help to build character. Tolerance, cooperation, learning to live with the rest of the family and society, and, in general, being a good citizen are not inherited qualities, but are developed from the environment in which a child lives. Therefore, censoring, nagging, and shaming should be avoided, but restraints and commands that are enforced encourage healthy character development that helps to influence people and win friends all through one's life.

Thumb- and finger-sucking may be practiced during the waking hours because of fatigue, or to attract attention, and to annoy parents. A child should have adequate rest and ample play outlets, and his parents should correct undesirable attitudes.

Parents' indifference to acts and habits that occur early in a child's life should not be countenanced because parents so frequently hear that the child will eventually grow out of these habits.

A BIOLOGIC APPROACH TO ORTHODONTICS

NORMAN GRAY, H.D.D., R.C.S., L.D.S., EASTBOURNE, ENGLAND

IN REVIEWING the field of orthodontics from many angles during the eventful period between World War I and World War II, one is struck with the staggering contrasts with which this generation is faced. Never in living memory has brute force held such sway; never before have destruction and desolation on such a vast scale been contemplated, never such breakup of home life, never such movement of the child population. Liberty in vast areas has been destroyed, justice travestied. Our world is very sick and very weary.

On the other hand, there is the startling contrast of a great and growing body of idealists who look upon this sickness as a magnificent opportunity for reconstruction on an unimagined scale, not only in Britain's fair and pleasant land, but also beyond to the wider horizons of recently occupied Europe. The world is beginning to talk seriously about the New United States of Europe. Winston Churchill in Britain and leading politicians in other countries look favorably upon such a scheme. Holland, Belgium, France, Spain, Portugal, Italy, Britain, etc., would be involved not only in the breaking down of financial and customs barriers, but also in a common plan for transport, fuel, labor, and, last but not least, medical and dental health services.

In Britain, as you know, we are faced with a State Medical and Dental Service this July. Our government has realized at last that scientific knowledge and investigation in every sphere of the physical welfare of our national life are just as important in peace as in war. As the medical correspondent of *The Times*[1] pointed out recently (Oct. 27, 1944), "The medical care of the child in sickness and health is now entering upon a new and most important phase closely concerned with the welfare of the nation as a whole."

In a presidential address read before the British Society for the Study of Orthodontics, 1945, I ventured to suggest that our field of orthodontics, which specializes in child welfare, will shortly be called upon to play a more active part in the national life. I have chosen the subject for my paper because I believe that as orthodontists we are building on a sure foundation if we approach our task with the biologic factor rather than the mechanical point of view uppermost in our minds, and I see from the summary of a paper by your President, Dr. Duyzings, in 1947 that he agrees with me in this.

The knowledge necessary to treat orthodontic cases successfully is derived largely from subjects that make up the science of biology, although our treatment must still be largely mechanical. All surgery is a mechanical process, knives, needles, scissors, saws, and drills, but no one would regard a mere mechanical knowledge as sufficient qualification to allow the surgeon to remove one's appendix.

Read at the meeting of the Dutch Orthodontic Society, Utrecht, Jan. 17, 1948.

As far back as 1925 the report issued by the Education Committee of The British Society for the Study of Orthodontics suggested the biologic approach when they defined orthodontics as "the study of the growth and development of the jaws and face particularly, and the body generally, as influencing the positions of the teeth. The study of the action and reaction of internal and external influences on this development, and finally the prevention and correction of perverted and arrested development."[2]

The report goes on to state that "the aims of orthodontic practice are to obviate the evils or irregularities of the teeth which are frequently so gross as to constitute an obvious defect of feature, often accompanied by perverted respiratory function, impaired biting power, increased liability to pyorrhea and dental caries."

The complex problems in this field are essentially biologic in their nature, although at present our method of treatment is mechanical. Biology is the general science of living organisms, plants and animals alike. It deals with that peculiar activity we call life. The *Encyclopaedia Britannica*[3] describes it as a general science because it includes the special sciences of botany, zoology, bacteriology, anatomy and physiology. It deals with:

1. Analysis of structures both macroscopic and microscopic.
2. Analysis of functional activity, or how the organism works.
3. Embryology, which inquires into development and investigates the factors that are operative in growth.
4. Etiology asks: "How have these organisms come to be as they are, both as regards themselves and as regards their interrelations?"

"A knowledge of microscopic and macroscopic anatomy of teeth, periodontal membrane, alveolar bone and surrounding muscles, is of little value to the practising orthodontist unless he appreciates the relationship of these parts to one another, for the various tissues do not act alone, but are integral parts of that organization which is life, but when broken down leads to disease, disharmony, death."

Dr. A. LeRoy Johnson,[4] upon whose postgraduate teaching at the University of Pennsylvania I largely base these remarks, stated long ago that the foundation of the biologic point of view is that "the form of structure is the result of an inter-action of function and structure, and that in the ultimate function is the determining factor in form development." In other words, normal function is the prerequisite to well-shaped dental arches.

In an earlier paper I stated[5]: "In orthodontic problems we are dealing with the results of perverted developmental processes. Development is the result of the mutual action of function, environment and heredity. It is this that imposes all the qualifications in diagnosis and prognosis. The first two we can influence, the last we cannot. The form of structure is never entirely determined by one force alone. More and more biologists produce evidence to support the belief that the factors of development are inherent in the cell as much as external environment.

"The intrinsic vital forces within the germ cell fix the possibilities of development, and set boundaries which cannot be passed. We inherit the possibility to grow to a certain size, but whether the inherent possibilities we possess are realized depends largely upon the environment in which we live." To make a diagnosis of the basic cause of malocclusion we cannot avoid the conclusion that it is the result of no single factor; intrinsically it is the interplay of many long-standing forces.

The more we can recognize the presence of inherited characteristics or the lack of growth principles, just so much shall we be saved from treating cases that are beyond all mechanical influence. Many cases respond to present methods of treatment, some do not. I venture to suggest that a very frequent cause of faulty prognosis is our circumscribed point of view.

Dr. Oren A. Oliver, sectional editor of the AMERICAN JOURNAL OF ORTHODONTICS, writes[6]: "All of us here will realize that mechanical therapy is not the sole factor when considering orthodontic problems . . . we all know and understand biologic principles, but do we know and understand the biologic effects of the particular appliance we use." He goes on to quote a letter from Dr. Milo Hellman, an unquestioned authority on biologic research:

"I have been clinging to a technique which is reducible to the simplest expedients. It may vary from an outfit comprising a labial arch, ligatures and other auxiliaries to no mechanism at all outside of an orangewood stick. I have never tried to produce rapid tooth movement, but I am always aiming at shortening the periods of orthodontic procedure."

Dr. Oliver, in the same paper, quotes extensively from an article by the late Dr. Albin Oppenheim, who says[7]: "In the use of strong forces the periodontal membrane becomes crushed and its nourishment facilities cut down. . . . The stronger the force used, the greater probability for a quick and forceful relapse. . . . My histologic evidence would seem to prove the points: (1) That the application of light forces is correct. (2) Our work should be performed so as to give nature ample time to form compensatory osteophytes. (3) Only light forces are able to produce an abundancy of the primary osteoclasts, which alone can be considered our real helpers."

In studying the efficient function of dental arches, our first consideration must be the relationship of the crowns of the teeth, so that the study of occlusion of the teeth is a logical introduction. Occlusion can be grouped into three headings: (1) hypothetical, (2) typical, and (3) normal.

Hypothetical Occlusion.—It is necessary to begin by assuming certain things to be true. We assume the existence of some manner of physical relation of the teeth best adapted to the food habits of the species, and furthermore we assume that there is a principle of harmonious development and structural design in the supporting tissues of the teeth.

Having such a hypothesis we must face the question of normal occlusion, the first step being to determine the typical occlusion of the human beings living in our Western world today. The term "type" refers to an abstraction, determined by the extent and direction of individual variations. It is the average, or mean, of a group of individuals. When these limits are determined it should

not be difficult to decide whether the large majority of the cases we treat in practice conform to type or not. In other words, typical occlusion is the standard adhered to by the greatest number of individuals free from disease, weakness, or deformity.

The investigations of Hellman have merited a great deal of attention because his object was to determine the type in occlusion as a rational basis of diagnosis. To make this decision Hellman recorded the occlusal relations of one hundred of the most perfect dentures he could find in the American museums. The specimens presented a difference in length of incisor overbite, ranging from edge to edge, to a deep overlapping of surfaces. If this is true, then the typical overbite he examined is anywhere between these extremes. This is an interesting observation in view of the countless attempts made in orthodontic practice to correct overbites that easily come within this range. Hellman[8] says in conclusion: "The normal occlusion of the teeth conceived by the orthodontist to present 100% perfection is a myth. It has no biologic justification and no scientific foundation. The type of occlusion in man is shown to be represented by a masticatory apparatus of approximately 90% perfect and a standard deviation of approximately 6%."

When we have endeavored to realize the occlusion that is typical of children, the next step is to determine the normal structural standard. In literature there is a good deal of confusion as to the meaning of the term "normal." It is used in a great variety of ways, such as "a goal to be sought after but never found." Just recently I read in a review on "Length of Life" that gerontologists, such as Korenchevsky (Brit. M. J., July 5, 1945), consider that seventy years is abnormal as an old-age limit. The reviewer went on to say that in this respect a definition of "normal" would be useful! Apparently there is at present no more information on normal old age and the normal span of life than there is on Dr. Angle's term "normal occlusion."

Dr. A. LeRoy Johnson[9] says: "It is the belief of many in the Dental profession today that teeth moved into 'normal occlusion' will stay there. At this time I shall not question the grounds for such belief; the thing that interests us at this point is that in the face of the claim that normal occlusion is the place where teeth will stay, we are not told what normal occlusion is from the standpoint of medical science."

The purpose of orthodontics is not to make the dentures of all conform to a mathematical standard; its purpose is to assist nature in the development of the jaws and associated parts, and so to harmonize the teeth and supporting parts that the whole masticatory apparatus will best achieve full functional activity. It does not necessarily mean perfection in the surface relations of the teeth.

Orthodontics is concerned with occlusion as a biologic expression of functional processes. In medicine the standard to which "normal" refers is a standard of functional phenomena; a normal stomach is one that performs its part efficiently. In cases of functional inefficiency of the stomach, a knowledge of the typical size, form, and position is taken into consideration, but the comparison of dimensions and form of the stomach of one individual with those of other individuals is not the criterion of normality. Johnson's[9] definition of normal

occlusion of the teeth is: "The condition of tooth relationship that is most effective in maintaining and establishing in its most stable form the organization of the living being."

In our search we are led on to the "Law of Variation" as a primary basis for study of normal occlusion. Although two individuals may resemble each other, yet invariably upon closer examination they will be found to differ. Human teeth in size, form, number, and relations are not always in perfect harmony with the structural design of the face as a whole. One frequently sees large teeth with a very small face, or, vice versa, very small teeth with a relatively large face. The teeth and their occlusion, the bones and investing tissue, and the temporomandibular joint may be an instance of harmonious development, but certain irregularities of the teeth may not constitute an abnormality, in the sense of being the result of perverted physiologic processes. It may be just a normal variation which is a universal characteristic of all living things.

This variation may be quantitative as in the size or number of teeth, or qualitative as in difference of color of the teeth, or correlative, by which is meant the tendency of organs and functions to appear in related groups. Correlative variation may be due to causes operating throughout a group of structures, such as the epiblastic group, so that variations of the enamel organ which is epiblastic, and the dentine, bone, and muscle which are mesoblastic, may result in a disharmony between the tooth forms and the bone and muscle structure of the face.

A. LeRoy Johnson[10] states: "In view of this law of variation there can be little hope of permanently eliminating a defect so long as the parts correlated with it are impaired or perverted in function. In the light of this principle, a permanent improvement of a malocclusion is probable only in so far as corrective treatment is general, as well as specific. A very general statement is that certain cases of mal-occlusion cannot be effectively corrected until nutritional processes, muscular and nervous functions, and even mental attitudes have been modified. . . . The interdependent relations of all parts is scientific justification of this statement."

When dental abnormalities of occlusion have been corrected by means of appliances, every effort should be made to ensure normal function of the surrounding parts. And this, in general, is a matter of:

Careful nutrition.
Correction of faulty habits.
Muscle exercises to improve the nerve and muscle tone of the face and lips.
Breathing exercises for nose and sinuses, palate bone, and dental arches.
General exercises for posture of head and chest.

The teeth are supported on all sides by tissues whose mature development depends entirely upon normal function. The growth of these tissues is influenced by different sets of factors harmonized by the activities of the whole part. When one or more of these activities fails, a disharmony begins to develop.

In the treatment of malocclusion, our task is to determine whether the disharmony can be corrected by building up the tissues, or whether teeth must be sacrificed for the good of the whole.

The biologic approach to treatment sees malocclusion as a lack of development. The knowledge required in treatment is a knowledge of growth phenomena, development, and function. The biologic point of view recognizes the degenerate tendencies of the human jaw, and so realizes in some cases that extraction of teeth is necessary.

Unquestionably the greatest service we can render is still by means of mechanical treatment; doubtless it will always be so, but I think principles of biology will sooner or later cause us to alter the type of many appliances in general use.

When the appliance is used it should be slow and deliberate in action, one's aim being to interfere with function as little as possible. When a position of mechanical advantage has been obtained for some time, it is advisable to introduce rest periods without appliances at all. And then, as Dr. Mershon says: "Although re-application is often necessary, the final result is more stable, and frequent retention is unnecessary."

I trust my remarks have been understood by all, and that they will lead us to wider horizons in our fascinating work.

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16 College Road.

Editorial

A Christmas Greeting

From the President of the American Association of Orthodontists

Once again we come to that blessed Christmas time which reminds us that our hearts should be filled with love and kindness for our fellow men; that there should be happiness and singing and a great joy in living. This is a time when we give and receive true and friendly greetings; a time when we enjoy the singing of Christmas carols with our children; a time when we think of the Christ child and his teachings of Peace and Hope and Cheer. It is a time when we are reminded that we should love our neighbors as ourselves. These are the real blessings of Christmas.

Our world is still in a turmoil. There are national controversies and disagreements. There are fear and hunger and bitterness and there are starving, homeless children, and all this because of greed and selfishness and a struggle for power. These are the times when a Christmas message is needed. It is needed by those who are in trouble, but it is also needed by you and by me. It is needed to instill in us the necessity of our ever-constant striving for Peace and Love and Good Will among men.

Christmas is a time for us to make new resolutions and to dedicate ourselves to be the peacemakers of our world. It is our little worlds that make up the great world of many nations. It is our example in our democratic, peace-loving, free America that will have universal influence on those bewildered peoples who are struggling for light and peace and happiness.

We in the orthodontic profession have been most fortunate. We are a most congenial and wholesome group who can work happily together. We have not suffered as many have. At this Christmas time let us count our many blessings and be forever thankful. Let us be thankful that our dealings are largely with children whose worlds are carefree and happy and whose outlook is bright and cheerful. We would do well to let their spirit infiltrate into our lives to such an extent that at last, when our time has been completed, we might be in that position where it may be said, "Well done, good and faithful servant."

To all the members of the American Association of Orthodontists and to all other brother orthodontists throughout the world and to their families, I extend my sincere Christmas greetings and my ardent desire that each one of you may share in God's greatest gifts—Love, Joy, Peace, and Happiness throughout your lives.

And now on behalf of all of the orthodontists in this section of the country, I cordially invite and urge you to attend the next meeting of the American Association of Orthodontists, which will be held at the Commodore Hotel, New York City, on May 2 through May 6, 1949. You will find a great spirit of hospitality from this group which is making every effort to have your visit comfortable, pleasant, and profitable.

A Merry Christmas and a Happy New Year to you all.

Lowrie J. Porter.

Reports

REPORT OF THE LIBRARIAN

An inventory of the bound volumes of the transactions of the American Association of Orthodontists shows that the following copies are stored in the library of the Northwestern University Dental School:

YEAR	NUMBER OF VOLUMES	YEAR	NUMBER OF VOLUMES
1905	1	1928	3
1907	13	1929	9
1908	1	1930	20
1909	1	1931	13
1910	1	1932	21
1911	1	1933	24
1913	1	1935	20
1914	1	1936	35
1916	2	1937	2
1919	5	1937	2
1920	110	1938	2
1922	1	1939	2
1924	10	1940	2
1925	10	1941	2
1926	1(Int. Ortho. Congress)	1943	2
		1944	2
1927	8	1946	2

At the present time these volumes are stored in cartons in the library stock room. Many of them contain much of value and interest and should be made available to the profession.

It has been suggested by Dr. Ernst that a real library might be built up in conjunction with the library of the American Dental Association in Chicago. The librarian of the American Dental Association has been contacted concerning such a plan, and assures us that he is willing and anxious to cooperate. He suggests that the rare volumes be kept in locked cases and that those of which we have more than one copy be placed on shelves for the use of the profession. This is only a suggested plan. They are willing to handle the volumes as we suggest.

This plan would assure a safe place for the rare volumes, which are increasing in value each year, and would make available to the profession those volumes of which we have duplicate copies.

Respectfully submitted,
RICHARD A. SMITH, Librarian.

Read at the Forty-fourth Annual Meeting of the American Association of Orthodontists, Columbus, Ohio, April 26-29, 1948.

REPORT OF THE AMERICAN BOARD OF ORTHODONTICS

The American Board of Orthodontics has just completed its 1948 session. As you all know, the Board was incorporated in 1929, held its first annual meeting in 1930, and has functioned continuously ever since. It may also be pointed out that the American Board of Orthodontics was the first certifying board to be established in dentistry and was the third board to be established in medicine or dentistry.

This year twenty-two applicants have been certified, making a total of 270 diplomates. You will be interested to know that during this session, 87 applications were processed by your Board, and it is thus evident that the importance of certification is being perceived in our membership. The increased load has made the work of the Board somewhat more arduous, but your directors feel that the importance of the work overshadows all other factors.

As has been mentioned in previous annual reports, one of the difficulties with which the Board is confronted is that of establishing the ethical standing of applicants. It is not the Board's function to pass upon this qualification of each applicant, for that responsibility belongs solely to the component section of the American Association of Orthodontists to which he has been admitted. The Board stresses once more the necessity for scrupulous screening of all who seek membership in our American Association of Orthodontists.

During the past year, members of your Board have met with the members of the Council on Dental Education and the Committee on Certification of Specialists of the American Dental Association. As many of you know, there are now five certifying boards in dentistry and discussions have been held relative to a unification of the requirements of candidates for application for certification in any of the Boards. One of the most important of these under scrutiny is the educational requirement. Your Board has recently taken the position that its requirements for certification shall remain unchanged until educational facilities in our dental colleges have been developed. As you all know, the minimum requirement of five years of exclusive practice of our specialty still remains one of the fundamental requisites for application.

Within the past few weeks, orthodontics suffered a loss in the death of Dr. Frederic T. Murlless, Jr., of Hartford, Connecticut. Dr. Murlless had served on the Board for seven years and was its president last year. It can truthfully be said that Dr. Murlless lent a dignity to the Board which is difficult to surpass. His judgment, loyalty to orthodontics, and inflexibility in the maintenance of highest ideals have left an indelible mark upon those of us who were fortunate enough to have been his close friends. His passing will be deeply regreted.

The Albert H. Ketcham Memorial Award Committee, which consists of president, vice-president, and president-elect of the American Association of Orthodontists, and two directors of the American Board of Orthodontics, selected Dr. Clinton Chappel Howard of Atlanta to be the recipient of the Award for 1948.

It is my pleasure to announce that Dr. Bernard G. deVries has been elected president of the Board, and I wish to take this opportunity to express the appreciation of the Board members for the efficient manner in which he has served as secretary for many years at a great personal sacrifice of time and energy. Dr. Joseph D. Eby of New York was re-elected vice-president. Dr. James A. Burrill of Chicago was re-elected treasurer, and Dr. Stephen C. Hopkins of Washington was elected secretary.

Each year it becomes the duty of the Board to welcome to this body a new director to take the place of the one who is retiring, and it now is my pleasure to recommend and place in nomination for a new director to serve for a term of seven years the name of Dr. Raymond L. Webster of Providence, Rhode Island. The Board feels sincerely that he will give much toward the activities of the organization.

As your retiring president of the Board, I would like to express my appreciation for the confidence you have placed in me. I also wish to thank the members of the Board who have made my duty a pleasurable one. I also deeply and sincerely feel that the Board will continue to function in a manner consistently worthy of your confidence.

OLIVER W. WHITE, President.

Read at the Forty-fourth Annual Meeting of the American Association of Orthodontists, Columbus, Ohio, April 26-29, 1948.

Department of Orthodontic Abstracts and Reviews

Edited by

Dr. J. A. Salzmann, New York City

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

Dento-Facial Deformities Associated With Nasal Obstruction: By A. Thornton Taylor, D.D.Sc., *South African D. J.*, December, 1947.

While mouth breathing associated with postnasal disturbance may occur with many differing types of malocclusion, two main types may be distinguished, differing broadly in etiology and facial characteristics, with differing treatment problems and a varying prognosis.

Broadly, one may classify a mechanical and developmental type. It may be here suggested that hereditary factors may be involved in either.

The mechanical type is characterized by prominent upper incisor teeth, narrow dental arches, an underdeveloped mandible with varying degrees of "bite depth" or incisal overlap, depending very largely upon the etiology of the condition. Those types associated with mechanical causation, such as thumb sucking, tend to have open "bites," while the straight out mouth breather, by virtue of the backward position of the lower jaw, has a deep "bite," with the mandibular incisors commonly biting behind the necks of the upper incisors or further lingual on the palatal mucosa.

These malocclusions are progressive because from most simple beginnings they can develop to an ever-increasing degree of abnormality because of a vicious circle of muscular cause and effect acting to accentuate the disharmony.

Note that the upper lip is functionless and allows the upper incisors to move forward. The lower lip rests cushionlike between the lingual surfaces of the upper incisors and the labial surfaces of the lower incisors, thus continuing to press the upper incisors forward and hold the lower incisors back. The corners of the mouth press in, accentuating the narrowing of the dental arches, and in the early stages of the progression the lower incisors, by contact with the sloping upper incisors, tend to move the upper incisor further and further forward. The tongue is also lower than normal and does not perform its part in helping to maintain dental arch width.

These are the commonly accepted mouth breathing types and agree with typical textbook description.

There is, however, another most distinctive type about which one can find nothing in current literature on growth and development. Rosenberger found in his study of growth in the respiratory area that "disturbances of growth are divisible into two types. In one a normal grown nose fails to drift forward through failure of forward expansion of the cranium. In the other a forwardly drifting nasal skeleton itself shows inharmonic growth in its several dimensions."

In these types we have definite maldevelopment of the bony architecture of the nasopharynx, either in whole or in part, and the premaxilla always and the maxilla in most cases suffer in this growth lag, with consequent diminished dental arches, high plates, narrow nares, deflected nasal septa, and other related defects.

The typical malocclusion that presents is usually marked by extreme irregularity; dental arch relationship may either be normal, postnormal, or mesial. The "bite," i.e., incisal overlap, is usually shallow or open, although a deep incisal overlap may present because of the general lack of growth in the jaws.

The most persistently perverse factor operating to continue mouth breathing, even when the airway is clear, is the functionless "hypotonic" upper lip.

If you will examine the average breather you will notice that it is not the dropping of the lower jaw or the pendulous lower lip that holds the mouth open so much as the lack of tone and lack of development of the upper lip preventing it from coming down into apposition with the lower lip, which itself should close with the upper, meeting it above or gingival to the incisal edge of the upper incisor teeth.

The biologic principle of use and disuse is of the greatest significance in regard to the function of breathing. Lamarck's third law is pertinent to our subject: "The development and efficiency of organs is constantly in proportion to the use of these organs." The functionless upper lip and, similarly, the loss of function of the nose as a respiratory organ aptly prove the truth of Lamarck's dictum first enunciated in 1815.

Heredity can play a big part in determining whether or not abnormal respiration may be expected to occur or persist. Environmental factors also operate most strongly where there is a hereditary tendency to mouth breathing because the child has no proper parental example, and also in many cases the parents will endeavor to overcome these factors and do what they can to bring respiratory habits to normal.

TREATMENT

Preventive—Mechanical.—The treatment of these conditions (whether or not they have passed through the rhinologist's hands) can be subdivided into a preventive and a facilitative phase. Preventive treatment embraces the use of mechanical appliances to render it difficult or impossible to breathe through the mouth. These, of course, can be used only when the airway is clear, or, at any rate, not completely blocked. They comprise essentially devices such as oral screens, the use of plasters to seal the mouth, bandages to tie it shut, and the like.

Preventive—Physical.—Essentially, exercises may be grouped into those that stimulate the forward movement of the jaw, i.e., thrusting type of exercise; the clenching exercise to bring the incisal planes of the teeth into function so that the huge power of the massetotemporal muscle group may be brought into play to lock a distal mandible into a forward position, providing dental arch harmony is attained in that position; the lip twisting exercise to develop power and tone in the orbicularis oris muscle group; lip stretching exercise to increase the length of the upper lip; and breathing exercises.

I pin my faith on what I term forced breathing, providing, of course, the nose can be used. In this I insist that the child perform some reasonable strenuous exercise compatible with his age, run or skip or hop or ride vigorously until he is "puffed," and do it for another five minutes with the mouth tightly closed. The increased respiratory pressure engendered by such action can be of enormous benefit if the exercise is done vigorously and conscientiously.

Facilitative Treatment.—Orthodontics provide a means to facilitate the closing of the mouth and perhaps that constitutes the orthodontist's main sphere of usefulness in the treatment of these conditions.

It is of no use at all to expect a child to close his mouth and keep it closed if the physical contours of his denture are such that it is impossible for him so to do. Many patients in this category, through disuse atrophy of the muscles of their lips, are unable to keep the mouth reposefully closed, but these are, in fact, invariably associated conditions.

The orthodontist's province is to retract the prominent incisors and/or expand both dental arches, and if necessary bring the lower jaw forward as speedily as possible so that a degree of normal facial balance may be attained and the patient set on the path toward normal respiratory function.

The question may arise in your mind as to the age when orthodontic treatment may be instituted and the simplest answer to this is to say "as early as its need is noticed." Most useful work can be done around the age of 8 or 9 in the mixed dentition, while the deciduous cuspids and molars are still present when a relatively short treatment phase, never more than six months, is sufficient to facilitate normal breathing, provided of course the patient cooperates in the elimination of the habits of malrespiration previously described. Orthodontic treatment of established mouth breathers should never be deferred until the eruption of the permanent dentition. On orthodontic concepts, a second and final phase may be undertaken at the age of 12, when the permanent dentition is complete, with the exception of the third molars. Those children, the majority who gain materially from their earlier phase of treatment, need no more than a little adjustment to bring them to normal occlusion, while those who for multifarious reasons either relapse or do not respond adequately, have at least learned the need for and the value of cooperation and are better patients in the second stage.

THE PSYCHOLOGY OF HABIT PREVENTION

The elimination of perverse muscle habits and the building up of normal muscle function constitute without doubt the most serious problem that we are collectively called upon to meet, and this I venture to suggest constitutes more than anything else a psychological problem. Not mechanics, not surgery, but outright applied psychology offers the only means of successful resolution of the muscular disharmonies associated with mouth breathing.

In all these cases of habitual mouth breathers there is undoubtedly a condition of muscular and mental unawareness of abnormality or aberration, because no great or obvious physical inconvenience is experienced as is the case in muscle impairment associated with paralysis of the limbs from whatever cause, or in the graver types of poliomyelitis where the respiratory muscles are unable to function. However, the need for muscle education or re-education is just as real in the mouth breather as it is in these more inconvenient physical disabilities where the nature of the disability is a constant and ever-present reminder of grave physical infirmity to the sufferer.

In the nasopharynx (denture) a vicious circle is all too commonly set up, but a definite and positive mental stimulus will create the tone and habit fixation necessary for permanent establishment of normal breathing habits provided, if in fact these habits are capable of establishment. Here I consider it necessary to refer to breathing as a habit, for it can be normal or abnormal.

I have asked scores and scores of children if their "physician" has told them anything about breathing or given them exercises, and they invariably say, "No." It is my contention here that if it is said, as I am sure it must be said, it is certainly said with insufficient emphasis and with no persistence.

PROGNOSIS

Prognosis of treatment depends largely on three factors:

1. The mechanics of respiration.
2. Denture balance.
3. Habit elimination.

Denture balance is, of course, intimately related to the mechanics of respiration. In point of fact, they can scarcely be separated, but as our conception of the denture may vary, I have separated these two subject headings. Habit elimination is to my mind the dominant factor, for without it there can be no normal mechanics and without it there can be no balance in the denture.

News and Notes

Prize Essay Contest, American Association of Orthodontists

Eligibility.—Any member of the American Association of Orthodontists; any person affiliated with a recognized institution in the field of dentistry as a teacher, researcher, undergraduate or graduate student shall be eligible to enter the competition.

Character of Essay.—Each essay submitted must represent an original investigation and contain some new significant material of value to the art or science of orthodontics.

Prize.—A cash prize of $500 is offered for the essay judged to be the winner. The committee, however, reserves the right to omit the award if in its judgment none of the entries is considered to be worthy. Honorable mention will be awarded to those authors taking second and third places. The first three papers will become the property of the American Association of Orthodontists and will be published. All other essays will be returned.

Specifications.—All essays must be typewritten on 8½ by 11 inch white paper, double spaced with 1 inch margins, and composed in good English. Three copies of each paper, complete with illustrations, bibliography, tables, charts, etc., must be submitted. The name and address of the author must not appear in the essay. For purposes of identification, the author's name together with a brief biographical sketch which sets forth his or her dental and/or orthodontic training, present activity, and status (practitioner, teacher, student, research worker, etc.) should be typed on a separate sheet of paper and enclosed in a sealed envelope. The envelope should carry the title of the essay.

Presentation.—The author of the winning essay will be invited to present it at the meeting of the American Association of Orthodontists to be held in New York City, New York, May 2-6, 1949.

Final Submission Date.—No essay will be considered for this competition unless received in triplicate by the Chairman of the Research Committee on or before March 15, 1949.

Allan G. Brodie, Chairman Research Committee,
American Association of Orthodontists,
30 North Michigan Avenue, Chicago 2, Ill.

American Board of Orthodontics

The 1949 meeting of the American Board of Orthodontics will be held at the Commodore Hotel, New York, N. Y., April 28, 29, 30, and May 1. Orthodontists who may desire to be certified by the Board may obtain application blanks from the Secretary, Dr. Stephen C. Hopkins, 1726 Eye Street, N.W., Washington 6, D. C.

Central Section, Pacific Coast Society of Orthodontists

The next meeting of the Central Section of the Pacific Coast Society of Orthodontists will be held Feb. 21, 22, and 23, 1949, at San Francisco.

Chicago Association of Orthodontists. Program, 1948-1949

OFFICERS

President, B. F. DEWEL.
President-Elect, HOWARD J. BUCHNER.
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Program Committee, WILLIAM B. DOWNS, WILLIAM A. MURRAY, WALDO O. URBAN.

PROGRAM

October 18—Monday Evening, Bismarck Hotel—Third Floor
Clinic Night

1. Technique of Orienting and Tracing X-rays of the Head. J. Philip Baldridge.
2. Functional Analysis of Class II, Division 1 Malocclusion. Vernon R. Boman.
3. Photography. T. M. Graber.
4. Guiding Alveolar Growth and Eruption of the Teeth. Silas J. Kloehn.
5. Head Holder for Taking Lateral and Frontal Head X-rays. Raymond C. Thurow.

November 29—Monday Evening, Bismarck Hotel—Third Floor

The Considerations of Mandibular Anchorage in Class II Treatment. Howard J. Buchner.

January 31—Monday Evening, Bismarck Hotel—Third Floor

Myofunctional Therapy in the Treatment of Malocclusion. Dr. Alfred P. Rogers, Boston.

March 28—Monday Evening, Bismarck Hotel—Third Floor

The Contributions of Cephalometric X-rays to Case Analysis. John R. Thompson.

April 25—Monday, Bismarck Hotel—Third Floor
Afternoon meeting 3:00 P.M.

Measurements in the Appraisal of Orthodontic Patients.

Evening meeting

The Anatomical Basis of Malocclusion. Wendell L. Wylie, San Francisco.
Annual Meeting—Election of Officers.

Dr. William B. Downs Promoted to Professor of Orthodontics at the University of Illinois

Dr. William B. Downs of Aurora has been promoted to the rank of professor of orthodontics at the University of Illinois College of Dentistry.

Last spring Dr. Downs was named the winner of a $500 prize award offered by the American Association of Orthodontists for the presentation of an outstanding essay entitled "Relationship of the Component Parts of the Face: Their Significance, Treatment, and Prognosis." At the present time he is conducting studies on the effects of orthodontic treatment and growth upon the relationship of the facial structures.

Thomas P. Hinman Midwinter Clinic

The Thomas P. Hinman Midwinter Clinic will be held at the City Auditorium, Atlanta, Georgia, on March 20, 21, 22, and 23, 1949, under the auspices of the Fifth District Dental Society.

American Dental Association

Administrative parity of the Army Dental Corps with the Army Medical Corps is demanded in an editorial in the November issue of *The Journal of the American Dental Association.*

Failure of Army medical and dental officers to heed the demands of the profession for improvement, the Journal said, will result in an appeal to Congress "as the citizens of this country have a right to know why efficient dental service is being arbitrarily withheld from their sons and daughters who have been called into service."

Commenting on revised regulations for the dental service issued by the Army in September, the Journal said it remains to be seen whether this is a "real gesture in the right direction or another token of appeasement for those who have been critical of the Army Dental Corps."

The editorial said that the Association has little confidence that changes in regulations can be effective if they are unsupported by legislation, adding: "The prerequisites and traditions of any Army group cannot be permitted to block any longer the desire of a health profession to serve its country well—in both peace and war."

Pointing out that the "flagrant administrative inequalities of World War II" have focused national attention on the unjust conditions under which Army dental officers must serve their country, the editorial asserted that present conditions can be condoned no longer by the dental profession. It continued:

> The almost universal complaint arising from dental officers is a simple one. Dental officers charged with the responsibility for maintaining the dental health of military personnel are not given the authority to carry out that responsibility. Final authority for dental care in the Army rests with those untrained in dentistry and unfamiliar with dental problems. This indefensible administrative pattern tends strongly to lower the standards of dental service and to decrease the morale of the officers of the Dental Corps.
>
> Two methods have been proposed to bring about a much-needed improvement. The first urges "complete autonomy": the complete separation of the Dental Corps from the medical service. The second seeks to retain the Dental Corps as an integral part of the Medical Department but to give the Dental Corps administrative parity with the Medical Corps. . . .
>
> Dentistry is an important part of the general health service and should not be separated entirely from medicine. The interrelation of oral health and general health is so well known that every effort must be made to bring about closer cooperation between the dental and medical professions. This closer relationship can be effected in the Army by administrative parity and without impairing the close medical-dental relations that are essential for the welfare of the patient.
>
> Dentistry does not question the right of medicine to administer and control Army medical services. It does question the right of medicine to administer dental affairs. Not until administrative parity is granted the Dental Corps will the health services of the Army function efficiently. On numerous occasions, representatives of the Association have pointed out this seemingly simple fact to Army officials and have requested the proper integration of the dental service with the medical service. These requests have been denied. . . . The responsibility for the denial of parity rests heavily with the members of the Medical Corps and with the officers of the Dental Corps. Such an attitude on the part of the medical officers is inexplicable since members of the Army Medical Corps protest bitterly that certain rights of administration are withheld from them by the general staff. Under what logical argument, then, can the Medical Corps withhold from the Dental Corps the authority which it needs to administer dental affairs effectively?

The recent recommendations of Federal Security Administrator Oscar R. Ewing that a system of federal compulsory health insurance be established in the United States were described as "wishful thinking" by *The Journal of the American Dental Association* in its October issue.

Pointing out that many of Mr. Ewing's recommendations in his recent report, "The Nation's Health," are sound, the Journal asserts:

"It is recommended strongly that health, civic and congressional leaders study Mr. Ewing's report in its entirety, winnow the wheat from the chaff, file the recommendations for compulsory health insurance in the wastebasket and use the factual material as an aid in building a sane health service program for America."

The editorial follows in full:

"Federal Security Administrator, Oscar R. Ewing, on September 2, transmitted to President Truman his 186 page report on the state of the nation's health including recommendations to raise the national level of health during the next decade. Ostensibly, the report was prepared after consultation with more than 800 civic and professional leaders who participated in the National Health Assembly last May. Actually, Mr. Ewing employed the facts and figures presented by the participants of the Assembly to buttress his championship of national compulsory health insurance.

"References to the nation's dental needs, limited dental personnel and facilities, and the necessity for increased research and dentistry for children are brief but essentially accurate and appear to have stemmed from the recommendations of the dental section of the National Health Assembly. Mr. Ewing points out that the nation's present supply of dentists is not keeping pace with our raising population and recommends that the output of dental schools be increased progressively so that by 1960 we will have 95,000 practicing dentists distributed, it is hoped, more ideally throughout the country. By putting particular emphasis on preventive dentistry for children, the profession can, in the next decade, begin to close the gap between current, annual dental needs and the dental man power available for the task.

"The report further recommends that medical and nursing personnel and hospital facilities be similarly increased, and that more time and attention be devoted to preventive medicine and children's diseases.

"Few will quarrel with the broad observations and recommendations which Mr. Ewing and his aides have incorporated in three-quarters of his report, particularly with the observations regarding the need for increased health personnel and the necessity for establishing more and better health service in sparsely populated areas. But many will, and rightly should, contest that quarter section of the report in which Mr. Ewing and his co-authors minimize the effectiveness of voluntary health insurance and recommend a national system of compulsory insurance. The arguments used by Mr. Ewing on behalf of compulsory health insurance are palpably those that have been expounded for the past ten years by some of his associates in the Federal Security Administration. They are compounded of fact, preconscious opinion and wishful thinking. It is recommended strongly that health, civic and congressional leaders study Mr. Ewing's report in its entirety, winnow the wheat from the chaff, file the recommendations for compulsory health insurance in the wastebasket and use the factual material as an aid in building a sane health service program for America."

The high consumption of sugar by American children is the major cause of tooth decay which is now occurring six times more rapidly than the dental profession is able to provide corrective treatment, *The Journal of the American Dental Association* reported today.

In a symposium of eleven separate articles devoted to dental caries (decay), leading dental scientists advanced new evidence showing that carbohydrates, particularly sugars, are directly responsible for dental caries.

Principal hope for overcoming the loss of teeth resulting from man's excessive appetite for sugar, the scientists agreed, lies in greater use of fluorides which have resulted in a 40 to 50 per cent reduction in decay in children and the development of other therapeutic agents which will help counteract the harmful effects of sugar in the mouth.

Dr. Robert G. Kesel, of Chicago, Head of the Department of Applied Materia Medica and Therapeutics of the College of Dentistry, University of Illinois, summarized evidence collected by more than forty research workers in support of the theory that dental caries is initiated by acids resulting from the action of bacteria on refined carbohydrate foods in the mouth.

Dr. Kesel cited reports from Scandinavia, Italy, Japan, and elsewhere which showed a decrease in caries activity in direct proportion to the extent of sugar restriction during World War II. He reported dental caries has increased since sugar has become more plentiful.

At present, Dr. Kesel is engaged in large-scale experiments in the development of an ammonium ion dentifrice which holds promise of helping prevent dental caries.

Dr. Philip Jay, of Ann Arbor, Professor of Dentistry at the University of Michigan, reported a marked reduction in dental caries through the restriction of sugar in the diet. Dr. Jay said that of a group of persons with rampant dental caries, 83.4 per cent of those who adhered for two weeks to a diet low in carbohydrates and free from sugar exhibited a marked reduction in dental caries.

Dr. L. S. Fosdick, of Chicago, Professor of Chemistry, Dental School, Northwestern University, said that mankind's present consumption of sugar is in excess of the ability of the body's protective mechanisms to prevent dental decay. He added:

"Perhaps it was never intended that man should ingest the huge quantities of sugar he now consumes."

Dr. Allen O. Gruebbel, of Chicago, executive secretary of the A.D.A.'s Council on Dental Health, pointed out that dental caries is the chief cause of the loss of teeth in persons less than 30 years of age.

Noting that almost the entire population of the nation is subject to dental caries, Dr. Gruebbel said:

"The prevalence of caries is even more striking when examined in terms of affected tooth surfaces. At the age of 10, the average person has five permanent tooth surfaces attacked by caries; at the age of 18, twenty surfaces are affected; and at the age of 30, more than forty-five surfaces are involved."

Notes of Interest

Dr. A. B. Brusse and Dr. E. S. Linderholm wish to announce the association of Dr. Don V. Benkendorf at 1558 Humboldt, Denver 6, Colorado, practice limited to orthodontics.

John Mather Jackson, D.D.S., announces the opening of an office at 9 Rittenhouse Place, Ardmore, Pennsylvania, for the exclusive practice of orthodontics.

Dr. Alfred Jaffe announces the opening of his office at 126 Waterman Street, Suite 8, Providence 6, Rhode Island, telephone GAspee 4619, practice limited to orthodontics.

Milton Neger, D.D.S., announces that his practice will be limited to orthodontics at 301 Clinton Avenue, Newark, New Jersey, telephone BIgelow 8-4200.

George R. Webber, D.D.S., M.D.Sc., announces the removal of his office on Nov. 15, 1948, to 1311 Broadway Tower, Enid, Oklahoma, phone 2557, practice limited to orthodontics, hours 9 to 5 except Thursday.

Louis Emmons Yerkesm, D.D.S., is pleased to announce that Kenneth Monroe Roberts, D.D.S., is associated with him in the practice of orthodontics at 825 Linden Street, Allentown, Pennsylvania.

Questionnaire of the Military Affairs Committee of the American Association of Orthodontists

Name: _____
last first middle

Home address

Office address

Age Birthdate Birthplace

Is practice limited to orthodontics?——— Number of yeras in limited practice———

Preliminary college education

Dental school Degree and date

Postgraduate training Degree and date

List internships or residencies

States in which licensed to practice

Professional society memberships

In what branch of military service did you serve?

Date of entry Date of discharge

Number and relationship of dependents

1. 5.
2. 6.
3. 7.
4. 8.

The following questions are to be answered only by members who served in World War 11.

At termination of service were you discharged ( ) or released to inactive duty? ( )

Have you become affiliated with an organized reserve unit?

Would you be willing to volunteer for active service with your present rank and classification in an emergency?

Would you be willing to affiliate with an organized reserve unit if orthodontists are reclassified to insure duty limited to facial surgery and rehabilitation of casualty patients?

Cut out and mail to:

Dr. W. Robert MacConkey, Secretary,
Military Affairs Committee,
618 Temple Building,
Rochester 4, New York.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY is the official publication of the American Association of Orthodontists and the following component societies. The editorial board of the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY is composed of a representative of each one of the component societies of the American Association of Orthodontists.

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Secretary-Treasurer, Scott T. Holmes, 509 Hackley Union National Bank Bldg., Muskegon, Mich.

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Pacific Coast Society of Orthodontists

President, S. B. Hoskins - - - - - - - - - - - Medical Dental Bldg., Portland, Ore.
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Vice-President, Harry V. Banks - - - - - - - - - - - 1550 Lincoln, Denver, Colo.
Secretary-Treasurer, Elmer S. Linderholm - - - - - - - 1558 Humboldt, Denver, Colo.

Southern Society of Orthodontists

President, Neil J. Leonard - - - - - - - - - - - - Exchange Bldg., Memphis, Tenn.
Secretary, Leland T. Daniel - - - - - - - - - - - - - American Bldg., Orlando, Fla.

Southwestern Society of Orthodontists

President, J. C. Williams - - - - - - - - - - Medical Arts Bldg., Fort Worth, Texas
Secretary-Treasurer, Marion A. Flesher - - - - - Medical Arts Bldg., Oklahoma City, Okla.

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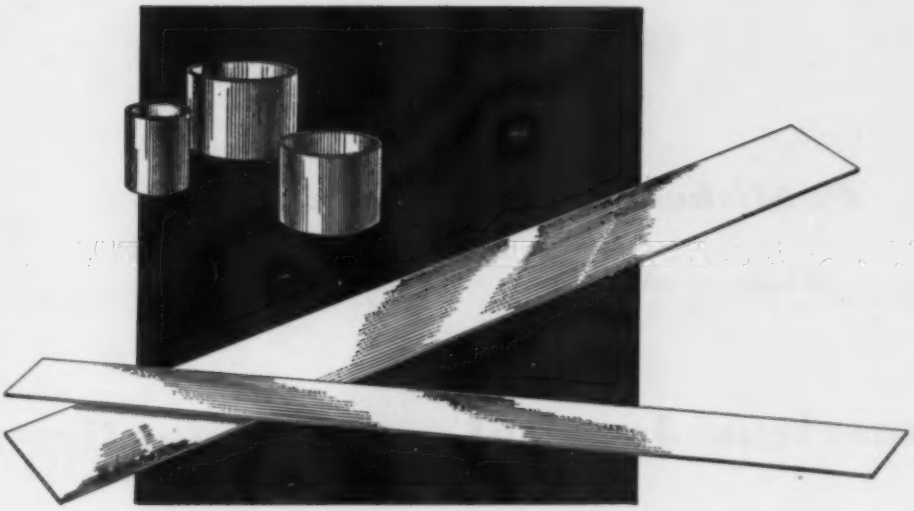

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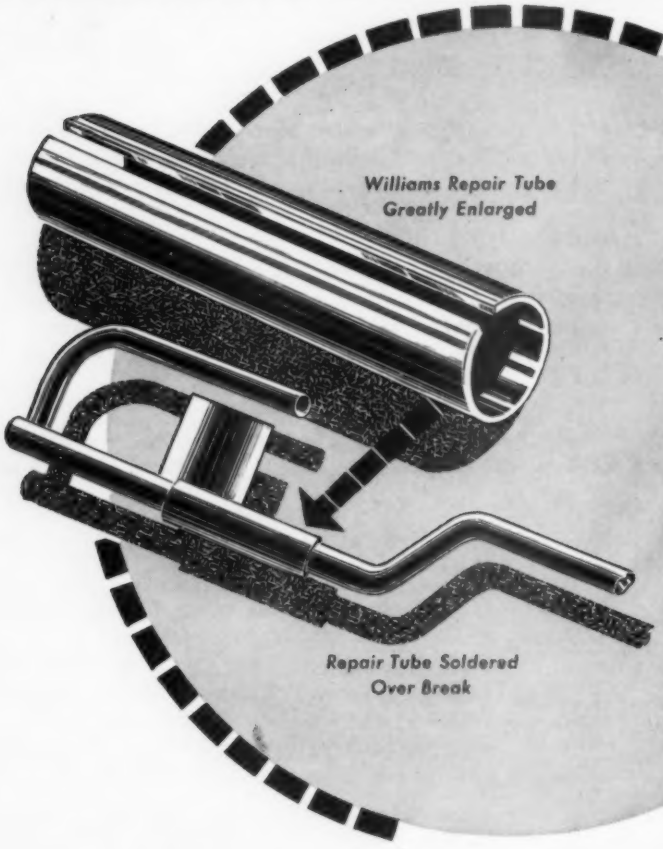

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